ENGINEERING NEWS-RECORD

SEPT. 3, 1959

PRICE 50 CENTS

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THE OUTLOOK FOR 1960

A McGRAW-HILL PUBLICATION

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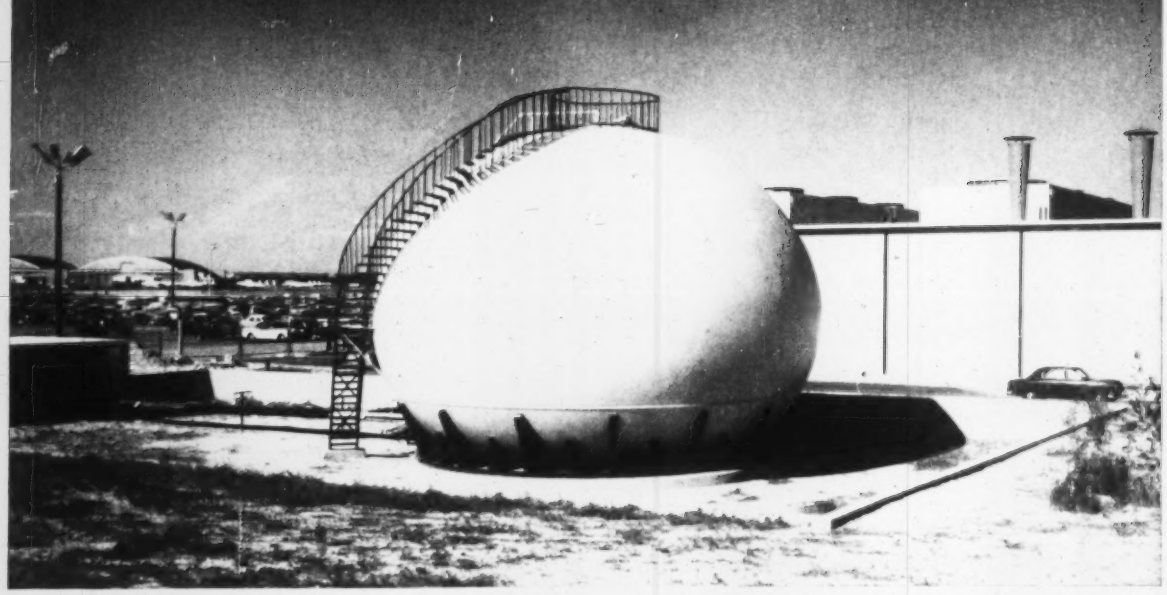
HORTONSPHEROID

stores fuel for $6,000,000 heating system



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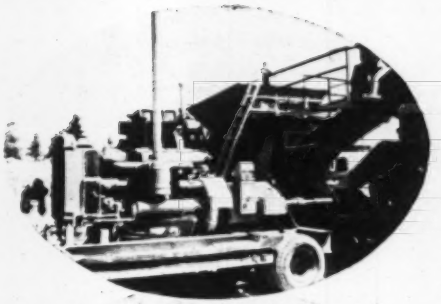

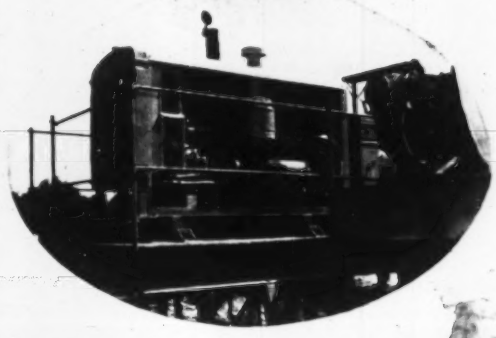

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Murphy Diesel Generator Set (left) provides inexpensive dependable electric power for a portable asphalt plant in New Hampshire.

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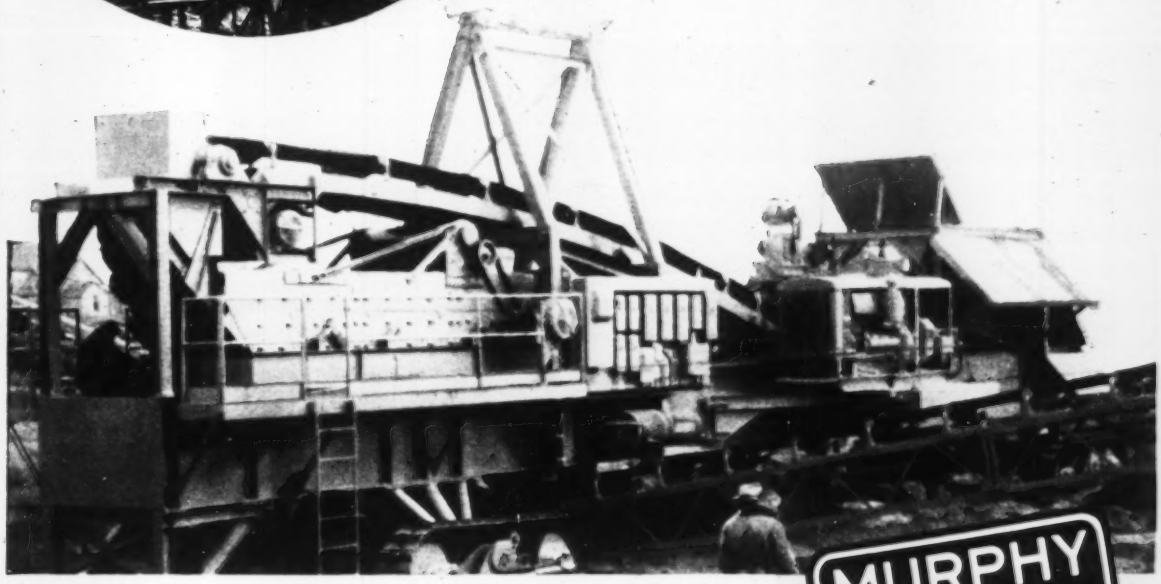

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Battered Walls

Symons Forms on St. Louis Expressway

. . . Form Double Battered Walls 12" at Top, 3' at Base

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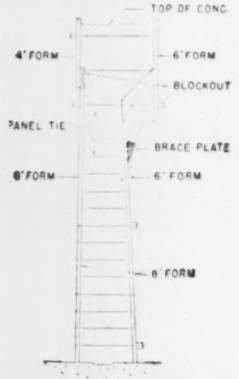

Job called for retaining walls, many of them double battered so that forms were angled to give 12" top thickness and up to 3' thickness at base. Heights varied from 4' to 34'. In addition, the forms were used to pour footings, abutments, piers and beams. Contractor obtained 30 re-uses.

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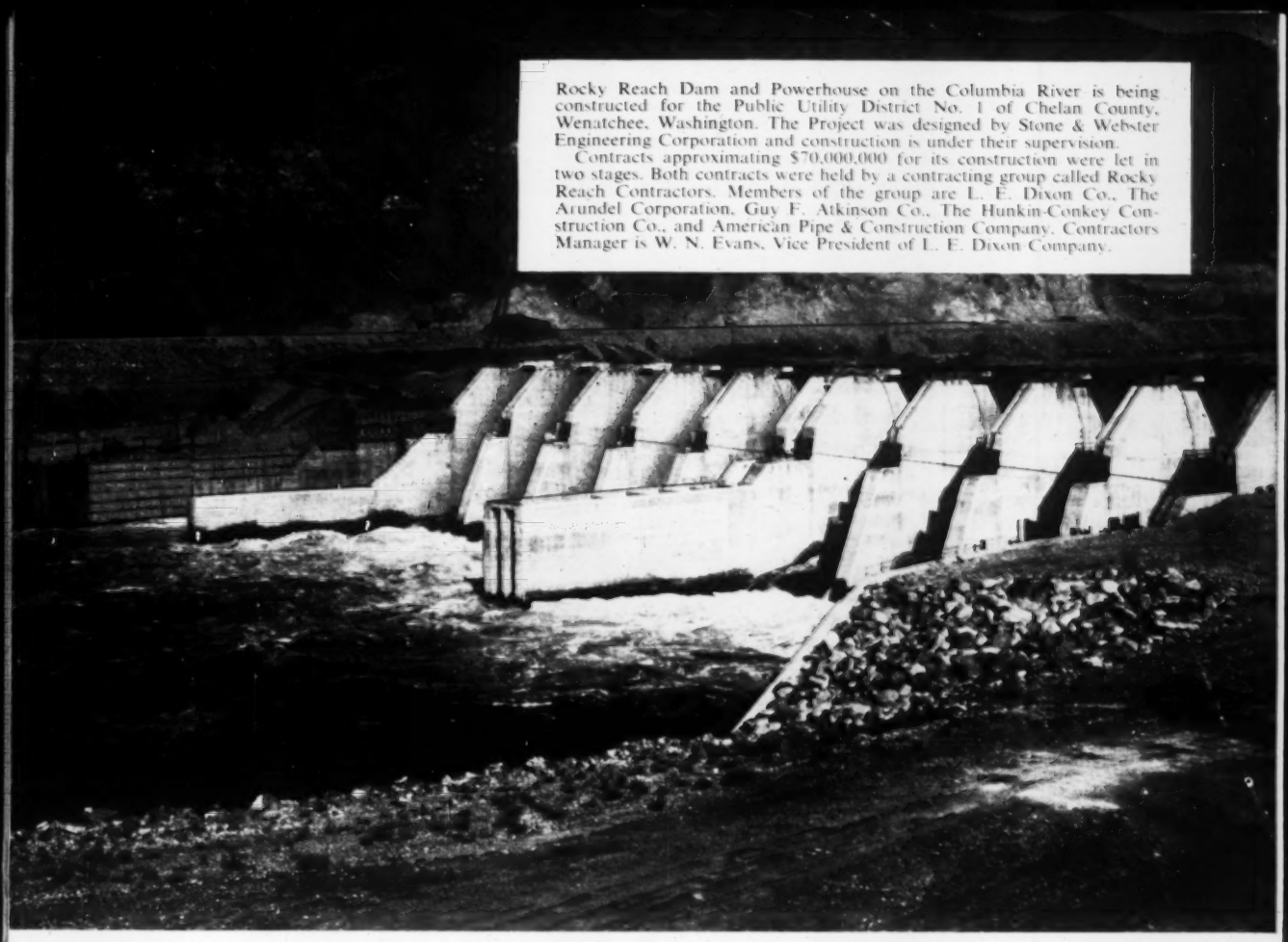
Texaco Simplified Lubrication Plan Keeps

W. N. EVANS (left), Contractors Manager for Rocky Reach Contractors, points out that the general high production rate on the job can be attributed to extended machine life and decreased downtime. He specified Texaco lubricants after thorough experience with these products in previous major Western dam projects. E. S. Saunders, Texaco Contractor Sales Representative, helped him choose the six basic lubricants required for all equipment on the job.



Rocky Reach Dam and Powerhouse on the Columbia River is being constructed for the Public Utility District No. 1 of Chelan County, Wenatchee, Washington. The Project was designed by Stone & Webster Engineering Corporation and construction is under their supervision.

Contracts approximating $70,000,000 for its construction were let in two stages. Both contracts were held by a contracting group called Rocky Reach Contractors. Members of the group are L. E. Dixon Co., The Arundel Corporation, Guy F. Atkinson Co., The Hunkin-Conkey Construction Co., and American Pipe & Construction Company. Contractors Manager is W. N. Evans, Vice President of L. E. Dixon Company.

Rocky Reach Construction on Schedule

Only six lubricants are needed to handle all major requirements on the Rocky Reach Dam project. That's how the Texaco Simplified Lubrication Plan keeps inventory down, cuts handling and storage costs, helps maintenance personnel sidestep the dangers of misapplication. Here's what Contractors Manager W. N. Evans has to say about it:

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What Is Civil Engineering's Place?

- **An ENR editorial asked educators to promote civil engineering as a valuable and respected profession.**
- **Then Prof. S. B. Irish asked, in effect, "What is there to promote?"**
- **Here are some answers from our readers . . .**

Sir—With further regard to your editorial "Civil Engineering's Place" (ENR May 7, p. 116) and Prof. S. B. Irish's letter on this subject (June 25, p. 7), I would like to commend his plea for the development of a philosophy to embrace the scattered special fields that now make up the civil engineering profession.

Historically, the present fields of structures, soil mechanics, sanitary engineering, hydraulics, transportation and construction are but the remnants of the original all-embracing civil-engineering profession. Civil engineering is without clear-cut objectives or responsibilities, and, as a result, we now have the most heterogeneous group of special fields of any of the engineering divisions. This makes it difficult to develop a rational common approach to research and education.

Northwestern University held a workshop last year in Evanston to which we invited twelve participants, including civil and industrial engineers, planners and operations research specialists. After three days of intensive review and discussion, the committee concluded that the civil engineering profession was not recognizing the challenge facing it today; that in concentrating on the "trees" of specialization we were missing the "forest" of broad objectives.

Five major problems were outlined as especially significant: 1. Construction 2. Transportation 3. Urban Development 4. Overseas Development (Technical Assistance) 5. Water Resource Planning.

It was further concluded that an acceptable philosophy to cover the broad field could be described as "environmental-control planning." This infers that the primary objective of civil engineering is the control, modification and adaptation of the physical environment in the interests of man's health, comfort, convenience and efficiency; further, that a study of planning provides the broad socio-economic review needed to relate the various specialized areas and to establish the criteria necessary for good design.

As a result of these recommendations, we are now introducing a core of environmental control-planning courses in the undergraduate program and are working toward the use of these courses to integrate the special areas into a more unified curriculum.

The results of this workshop lead me to believe that a more comprehensive study of the type envisioned by Professor Irish could have far-reaching significance. I thoroughly endorse both his suggestion and your approval of it.

JOHN A. LOGAN
Professor and Chairman
Civil Engineering Department
Northwestern University
Evanston, Ill.

▶ Professor Irish is a very capable protagonist for the engineering profession in general and civil engineering in particular. I have no wish to dispute the points he makes, or those in your editorial either. But a point you both failed to make is considerably more important than any of them.

The "attractiveness" of any profession must basically depend upon the people in it. For civil engineering, these people naturally include Steinman, Terzaghi, the late Hardy Cross, and many other brilliant contributors. But, unfortunately, Professor Irish's doleful reference to "the more routine and mundane problems in which the civil engineer is ordinarily engaged" can only be an admission that engineering "hacks" are also freely accepted into this branch of the profession. There is no intrinsic reason, however, why civil engineering should be more firmly bound in such a yoke than any other kind of engineering.

Engineering schools all too often confer engineering degrees upon men who can never be a real asset within the profession and who would themselves be probably better off had they taken only sub-professional training in the first place. Naturally this comment applies more forcefully to some institutions than it does to others, but none can wholly escape it. Within any such institutions, it applies more to some departments than to others. It has been my observation that civil engineering departments are the most frequent and serious offenders in this regard.

Engineering schools and colleges, and the individual departments within these institutions, can do the engineering profession in particular, as well as our society in general, a real service by making more effective efforts to prevent non-professional "hacks" from getting engineering degrees.

They should increase the quality of their graduates by being more rigorously selective in their graduation requirements, thus permitting a higher level of instruction to be used in educating a more able student body. This may well reduce the total number of engineering graduates but it will certainly increase the profession's attractiveness to qualified persons. It will force a sounder recognition of what is implied by the term "professional engineering," and it will promote appropriate adjustment in financial compensation rates for the consequently up-graded professional work. Collaterally, employers will be forced toward the use of sub-professional staffs on sub-professional work. The certain supplemental result of such changes will be to increase the quality of both professional and sub-professional work and, at the same time, to reduce the unit cost (to the extent that the term is meaningful) of each.

Press agentry or other effort to attract more and more guests to the party is exactly what is not needed. The real need is for some means to exclude the freeloaders and the gatecrashers. The best place for a "bouncer" obviously is at the front door, and engineering educational institutions for years have constituted the front door to the engineering profession. Perhaps Professor Irish and his colleagues should act more like "bouncers" and less like a welcoming committee.

F. A. UPSON
Hammond, Ind.

(Reader Comment continued p. 10)

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

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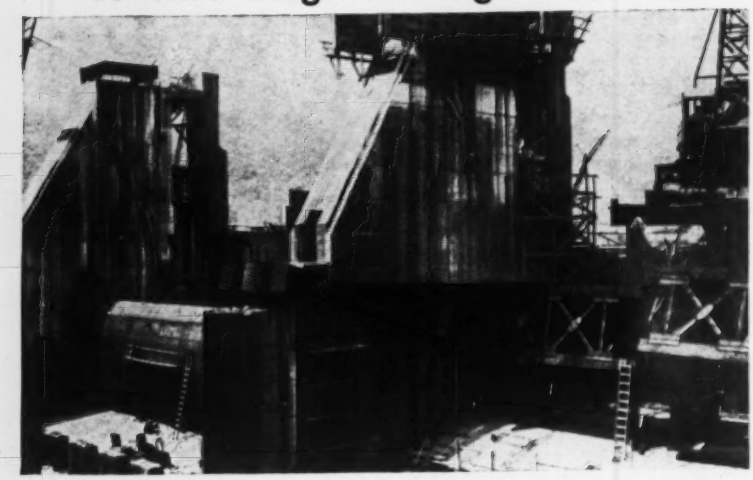

New Cumberland Dam, Ohio River, Corps of Engineers. Dravo Corp., General Contractors.

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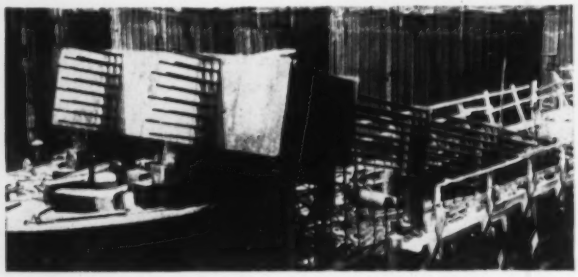

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. . . Reader Comment

(Continued from p. 6)

▶ Having spent most of my career so far (10 years) in the "municipal" end of civil engineering, both as a municipal employee and an engineer for a consultant, I have found that most clients (including taxpayers) are not too sure what a civil engineer is. They know the tools with which he works, usually, and they see the fruits of his efforts which they will acknowledge as a fact, but very, very seldom have I heard the "glamorous" ravings from anyone about a completed sewer project, a street improvement program, or some other project.

I do not say the above because it causes me any great concern, but I do say it to show that the general public has not yet taken the civil engineer into their considered "realm of professionalism." Even the Air Force hasn't classed the engineer as a "professional" under the Career Management Structure. It recognizes the professional area as medical, legal and clergy, only, and so states. Engineering is considered a part of the scientific and engineering career area.

I believe your editorial is justified in its wording and intent, and I think Professor Irish is likewise justified in his views. Also, I am glad to see the "rebuttals" (July 23). It shows one thing: we're not completely dead in the head yet; we're thinking about it.

HARRY S. THAYER
Foth & Porath, Inc.
Green Bay, Wis.

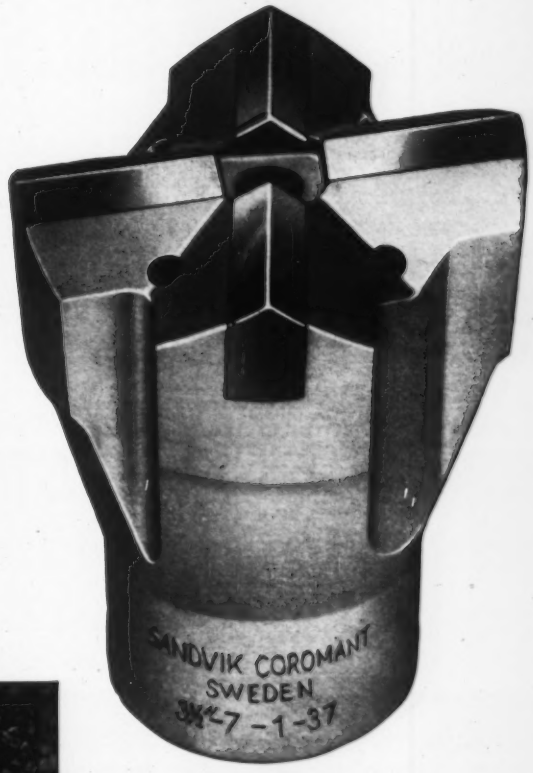
▶ It is heartening to read the two letters in your June 25 issue protesting the depreciation of the profession of civil engineering, expressed previously in the same columns by Professor Irish. Yet the detractors of the present role of the civil engineer are right if they mean that it is less important than it should be.

One may glory in the recently chosen "Seven Wonders" of recent civil engineering and at the same time realize that there are equally important civil engineering projects that should be under way or at least under study and apparently aren't—bold imaginative schemes to provide a) an integrated economic transportation system for a rapidly growing population in place of the chaos of competing facilities that we now have, b) region-wide and certainly basin-wide development of natural resources in accordance with long range plans, c) urban and suburban development in accordance with rational planning for human needs.

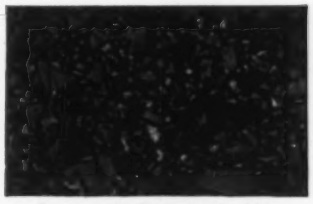
Other parts of the world also furnish inspiring examples of both the accomplishments and opportunities of civil engineering. Whether the free world remains free or goes communist may depend on whether civil engineers of USA or of USSR direct the development of the great untapped human and physical resources of Africa, South America and South Asia.

The appeal of the profession of civil

Longer bit life— with *new* Sandvik Coromant Bits



Sandvik Coromant Tungsten Carbide (Microphoto) Uniformity of size, even distribution of grain are marked. Free from porosity and impurities —therefore stronger, longer-lived.



Low quality Tungsten Carbide (Microphoto) Black marks are contaminations caused by deficient production control. They weaken the carbide, reduce its working life.

NEXT time you buy bits, specify Sandvik Coromant because they give more footage per bit, lower drilling costs. Here's why:

1 Only first-quality tungsten carbide is used —as shown in the microphotos above. This means less wear, longer life and a better job.

2 The bodies are precision-made of high quality alloy steel—tough enough to take the strain throughout the extra-long bit life.

3 The bigger Sandvik Coromant bits are all of X-design, which prevents rifling. No wonder Sandvik Coromant inserts are the most widely used in the world, drilling more than one billion feet every year.

SANDVIK COROMANT bits are supplied through Atlas Copco, the world's largest manufacturer of rock drills, who also supply Sandvik Coromant integral steels — the most widely used in the world — and Sandvik Coromant extension steel equipment.

Write or phone today for further details to either of the addresses below:

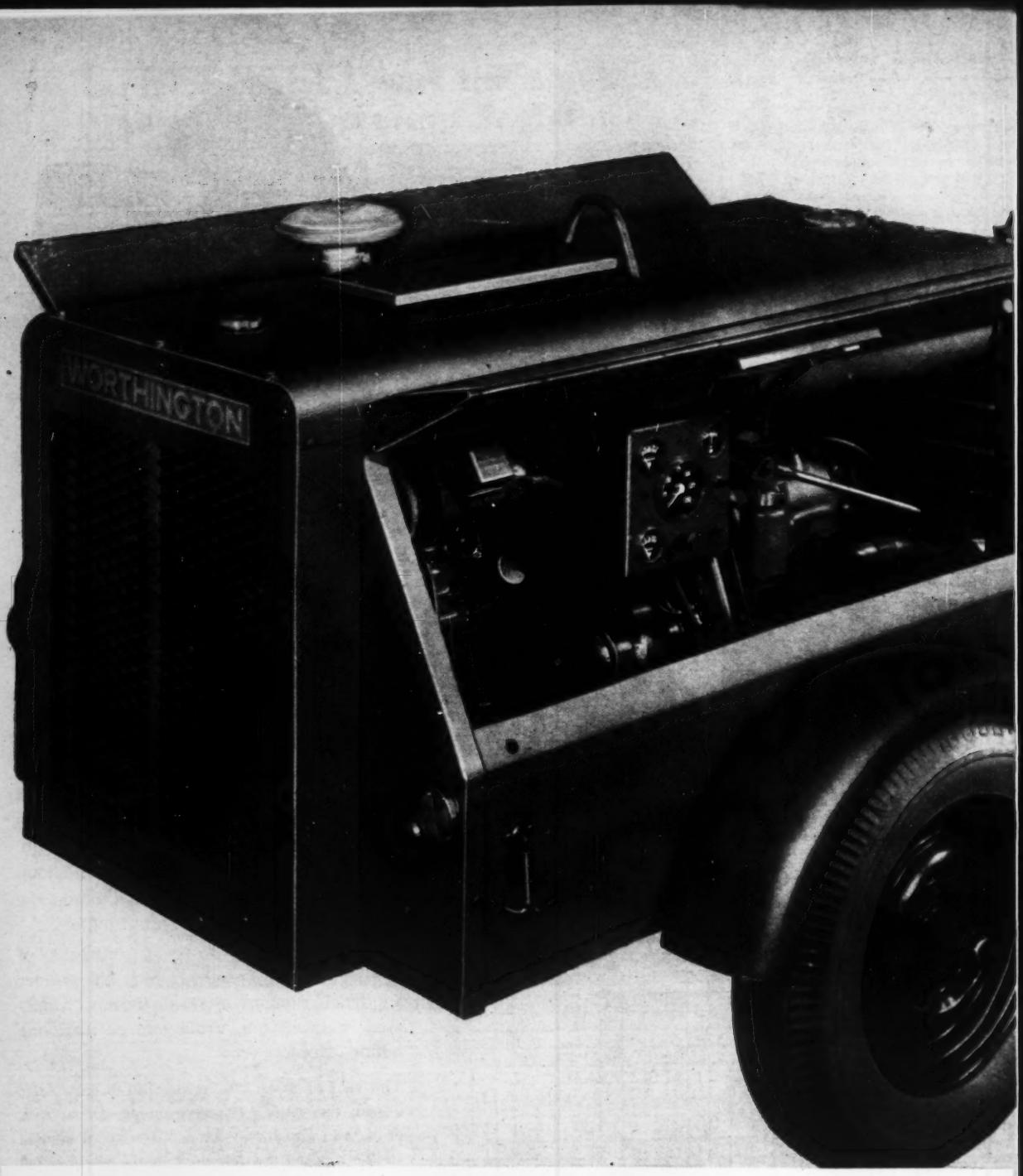
Sandvik Coromant Detachable Bits are Available in the following Thread Sizes and Bit Diameters

Type	Thread	Available Diameters, in Inches															
		1¼	1⅝	1½	1⅝	1¾	1⅞	2	2⅛	2¼	2⅜	2½	2⅝	3	3½	4	4½	5
SHOULDER	TAPER	x	x	x	x													
	F		x	x														
	113		x															
	H			x	x	x	x	x		x								
	115			x	x													
	D						x	x	x	x	x	x	x	x				
	K													x	x	x	x	
BOTTOMING	1" Rope				x	x	x	x		x								
	1¼" Rope						x	x	x	x		x		x				
	400						x	x		x		x						
	1½" Rope											x	x	x	x	x		
	600											x	x	x	x			
	700													x	x			
	J7.5															x	x	
	2" Rope														x	x	x	x
	1000																x	

610 Industrial Avenue
Paramus, New Jersey
COlfax 1-6800

Atlas Copco

930 Brittan Avenue
San Carlos, California
LYtell 1-0375



SPECIFICATIONS

COMPRESSOR

Normal operating pressure	100 lbs.
Maximum discharge pressure	125 lbs.
Rated speed	1800 rpm
No. of cylinders	1
Lubricating oil capacity	6 gals.
Compressed air storage capacity	1.5 cu. ft.
Air cleaner	dry type
Control	pneumatic
Pressure setting	75-125 lbs.
Differential	10 lbs.

ENGINE

Make	Continental Gas
Model	FA-162
Type	4 cycle
No. of cylinders	4
Bore	3 7/16 in.
Stroke	4 3/8 in.
Oil in crankcase	4 1/2 qt.
Water cooling system capacity	9 qt.
Type of starter	Electric
Fuel tank capacity	17 3/4 gals.
Clutch—Make	Industrial
Type	Disc
Size	Single 8 in.
Hp at sea level	41 hp

DIMENSIONS (skid)

Length	79 in.
Width	27 in.
Height	43 1/2 in.
Net weight	1325 lbs.

DIMENSIONS (pneumatic tires)

Length	121 9/16 in.
Width	61 in.
Height	54 in.
Net weight	1730 lbs.
Tires, size and ply	6-40 x 15-4

Introducing the 85'

SUPER BLUE BRUTE ROTARY COMPRESSOR

The single stage compressor with two stage economy

At last, here is an 85' rotary compressor with two stage economy and single stage simplicity.

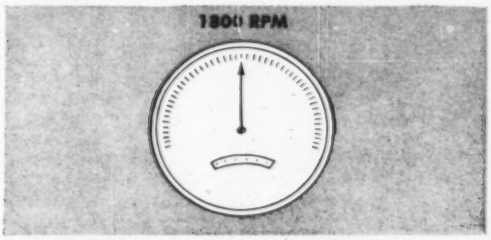
The new Super Blue Brute 85 will operate all day on a tankful of gasoline. This is because the engine runs at a gas-saving 1800 rpm instead of higher speeds.

You get economy without sacrificing power. The compressor is amply-powered with a 162 cubic inch engine that provides a horsepower reserve of over 50%. And like all Blue Brute rotaries, engine life is extended because a clutch allows you to warm-up the engine *without engaging the compressor.*

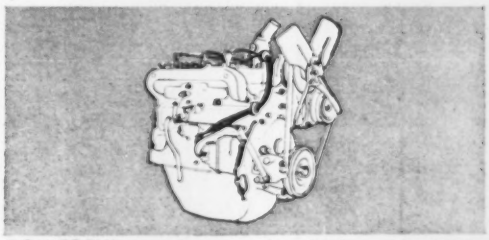
The new rotary is also versatile. It's designed for high speed towing with a low center of gravity, high speed tires, and a heavy tow bar. No matter what the terrain, you won't have any trouble operating this compressor. It will perform at versatile angles.

See your Blue Brute distributor for more information. Or write to Worthington Corporation, Section 60-19, Holyoke, Mass. In Canada: Worthington (Canada) Ltd., Brantford, Ontario.

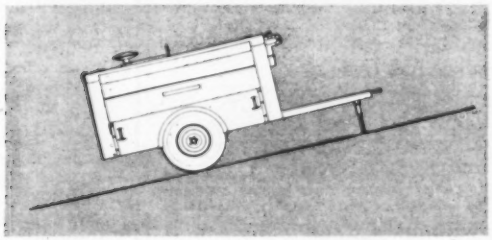
WORTHINGTON



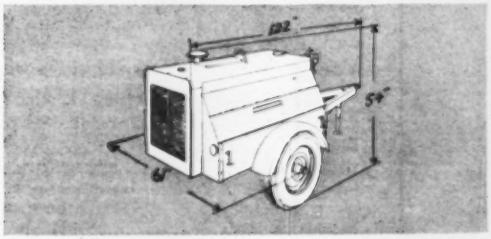
ECONOMICAL. For peak efficiency, engine operates at 1800 rpm instead of higher speeds.



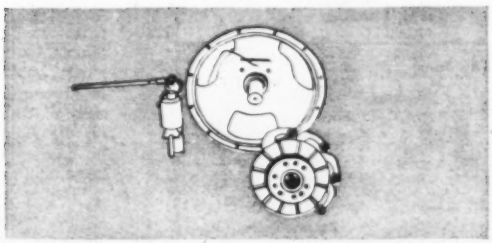
POWERFUL. Amply powered engine has a reserve capacity of over 50%. No altitude problems.



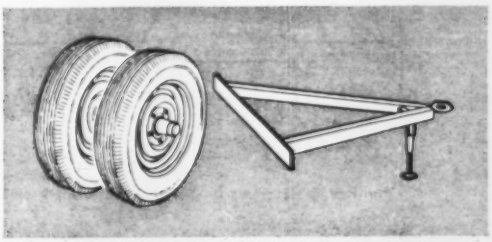
VERSATILE. Compressor can be operated at versatile angles.



COMPACT. Unit is only 54 inches high, 61 inches wide, and 122 inches long (pneumatic tire unit.)



YEARS OF EXTRA LIFE. Clutch allows you to warm up engine without engaging compressor for easier starts.



DESIGNED FOR HIGH SPEED TOWING. Unit has high speed tires, and a heavy tow bar.

Perma-Vane rotor blades

make the

DAVEY Hydrovane Rotary 125

today's best compressor investment!

Davey 125 on Ohio Fuel Gas Co. job, Galena, Ohio.

Tired of blade troubles?

Then, make your next compressor a Davey!

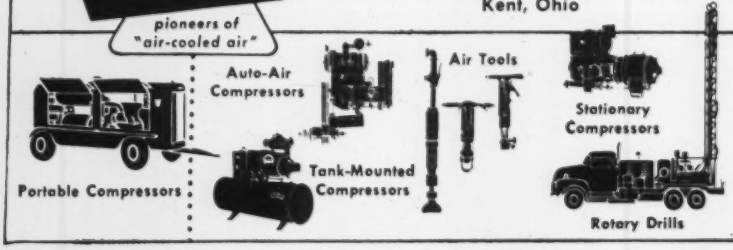
For, Davey's new Perma-Vane blades have greater wear resistance . . . are free from deterioration and breakage . . . eliminate the biggest single source of rotary compressor trouble . . . last longer. Because they're lightweight and "friction-free", Perma-Vanes also require less engine power, reduce fuel costs.

Remember, too, Davey Hydrovane Rotary Compressors are completely free from complicated pipes, pulleys, tubing or plumbing. They actually have 50% fewer working parts than most other rotary compressors . . . are easy to maintain and service! A-028A

See your Davey distributor today.
Write for Bulletin.

DAVEY
pioneers of "air-cooled air"

DAVEY COMPRESSOR CO.
Kent, Ohio



. . . Reader Comment

engineering to sensitive youth at this moment in history would seem to be irresistible.

W. E. HOWLAND
Professor of Sanitary Engineering
Purdue University
Lafayette, Ind.

▶What is Glamor? I do not know, and I am reasonably sure that the persons who comment do not either.

I have been moving around the world nearly ever since I graduated from Purdue University in 1908. I have always earned enough and have always done exactly as I wished and gone where I wished and generally when I wished. I have met the most interesting people, traveled over a great part of the world, have worked or at least had assignments and made reports on work in no less than ten countries. I enjoyed every day of it and only regret that age precludes me keeping at it. If I had it to do over I would not change a thing.

Is that glamor? Suits me and is what I started out for more than fifty years ago. I got what I wanted. What more can one ask?

W. C. A. PALMER
Anna Maria, Fla.

▶I am definite in my agreement to point to the construction industry "in all its glory".

I am one of the many underpaid, overworked engineers in the field of heavy construction who came into the field unrecruited. I am a graduate civil engineer with an additional B.S. in geology. I admit that my salary is not really too attractive, and my hours are definitely not at all attractive; I wear rough clothes and probably would be taken quicker many times for anything but an engineer.

But I have the satisfaction of looking back over a small part of some large projects and looking every day at the products of the industry being built by little people just like me and I would not trade my grubby little corner in an office trailer for any of the air conditioned laboratories in the world.

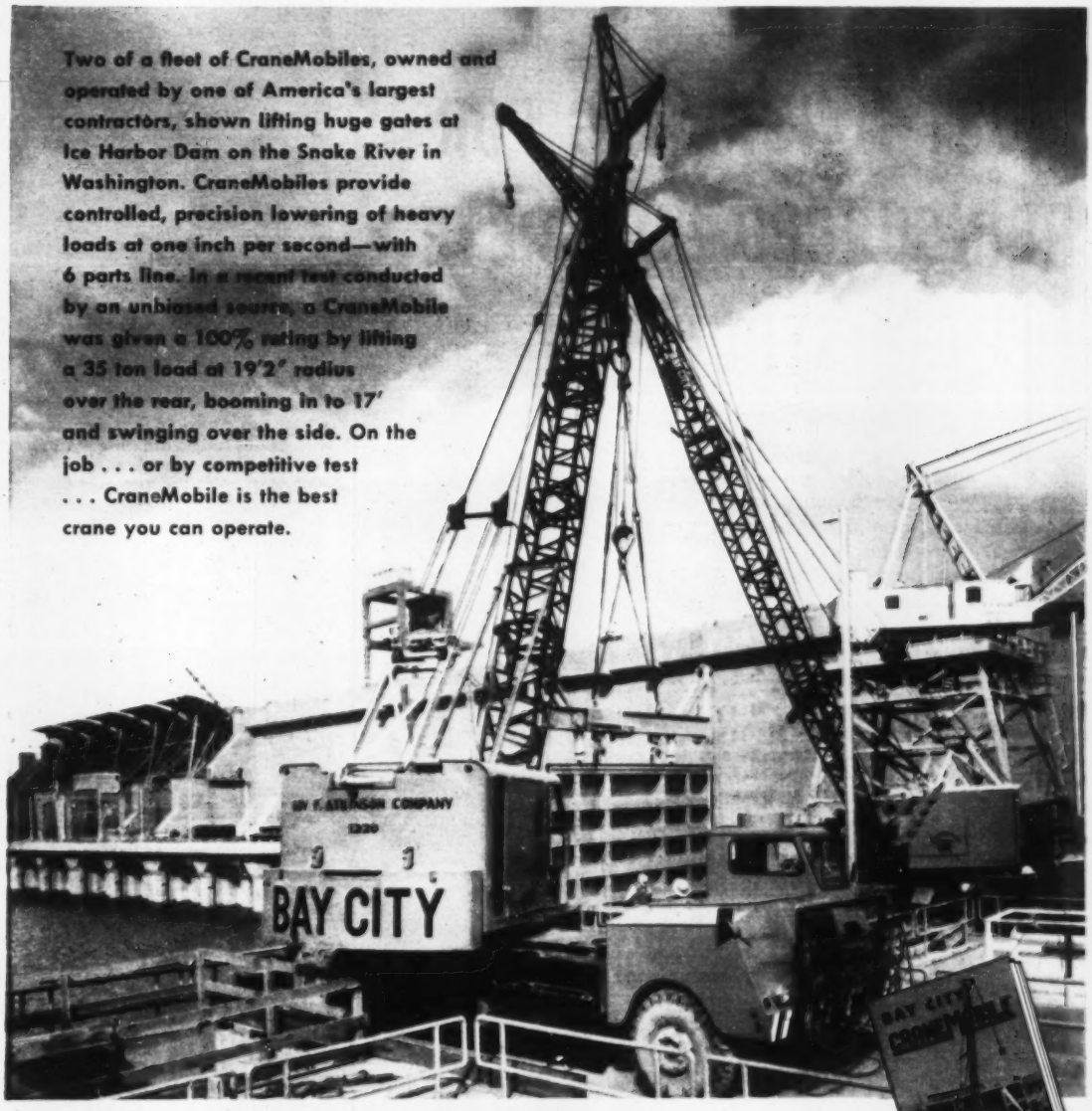
EDWARD W. SMITH
Contractor's engineer

▶Have you realized that you are furthering the condition in the letter and editorial?

In practically every issue (and some times several times in the same issue) you report on some building design and or construction, mentioning the names of the contractor and the architect with no reference to engineers. Since you are an engineering magazine, the reverse should be the case. In my opinion, the engineer should be recognized, whether he is a consultant or the employee of the architect. If no engineer was used, this also should be stated.

W. A. MCCRACKEN
Consulting engineer
Houston, Tex.

BAY CITY...THE BEST CRANE BY A DAM SITE!



Two of a fleet of CraneMobiles, owned and operated by one of America's largest contractors, shown lifting huge gates at Ice Harbor Dam on the Snake River in Washington. CraneMobiles provide controlled, precision lowering of heavy loads at one inch per second—with 6 parts line. In a recent test conducted by an unbiased source, a CraneMobile was given a 100% rating by lifting a 35 ton load at 19'2" radius over the rear, booming in to 17' and swinging over the side. On the job . . . or by competitive test . . . CraneMobile is the best crane you can operate.

NEW 3¼% FINANCE PLAN FOR YOU

A new low-cost 3¼% financing plan that makes it easy to put Performance Proved BAY CITY equipment to work for you. Monthly payments up to 3 years on crawler machines, 5 years on rubber tire mounted machines. See your BAY CITY dealer, or write for details.

A NEW CATALOG

that gives complete information on design and construction features of the 35-40 Ton CraneMobiles is now available. It's free. Send for it today.

BAY CITY

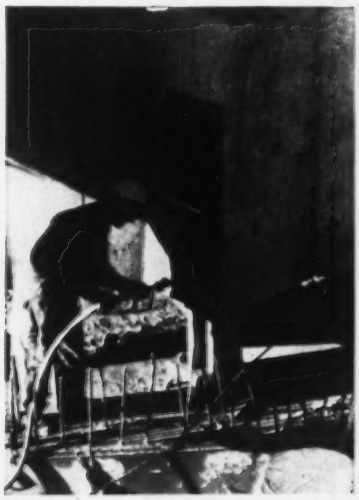
THE WORLD'S BEST BUILT SHOVELS AND CRANES

BAY CITY SHOVELS INC., BAY CITY 1, MICHIGAN

284

A new Ryerson service . . .

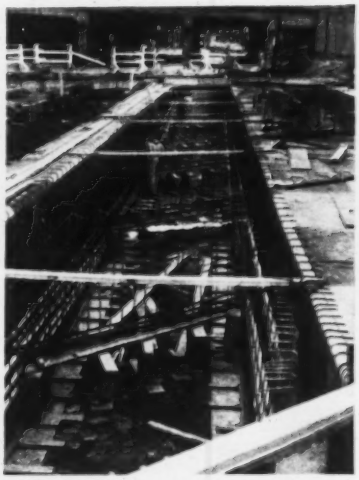
POST-TENSIONING FOR REINFORCED CONCRETE CONSTRUCTION



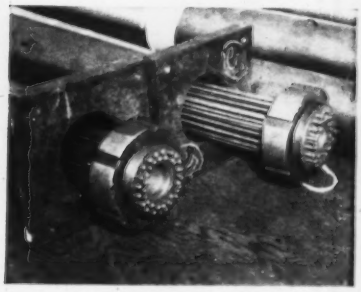
GROUTING MIXTURE is forced into tendons and around wires after stressing. Pressure injectors and venting procedures assure positive filling of all casing and trumpet voids.

The nation's most complete post-tensioning service is now being offered to contractors through the 20 Ryerson steel service centers coast to coast. This new service includes a complete "package": force development calculations, detailing and placement plans, complete tendon and anchorage assemblies, stressing and grouting equipment, and field labor procedures—assuring the most reliable cast-in-place or precast post-tensioned construction at minimum cost.

The patented* method for prestressing and anchoring reinforcements of concrete used by Ryerson is the time-proven BBRV system. The many advantages of this method have been demonstrated in hundreds of major European construction projects of all types over the past 15 years. Ryerson post-tensioning service also gives contractors the advantage of a single source for the fabricated re-bars, accessories and other steel requirements of the job.



SUPPLEMENTARY REINFORCING STEEL in position around tendons, and bridge girder.



40-WIRE ASSEMBLIES in flexible conduit before placement—showing moveable anchor head, lock nut, base plate, and trumpet encasing last few feet of flexible conduit.

SEVEN TENDONS (six 40-wire units and one 12-wire unit) draped in position for 156-foot bridge girder.

Examples of current projects using Ryerson post-tensioning service: the second deck approaches for the George Washington Bridge in New York City, Chicago's huge lake-front exposition hall, airfield pavement slabs at a California air base, a 468-foot overpass for the Northwest Expressway in Chicago (three 156-foot clear spans), the longest post-tensioned concrete bridge span in the Western Hemisphere at Oneida Lake, New York (total clear span, 320 feet).

For complete information on this new post-tensioning service or for help on specific projects, contact your nearby Ryerson plant. Specialists are available to give you all the facts, estimate costs, and show how Ryerson is equipped to improve and simplify your next construction job.

*U. S. Patent No. 2728978

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Joseph T. Ryerson & Son, Inc.

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ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

INDUSTRIAL AWARDS SOAR—Industrial building contracts hit $183.8 million this week—highest weekly volume reported since February, 1957. Industrial contracts are now 58% ahead of last year, with a volume to date of $2.07 million. They're already 18% ahead of the full 1958 total.

ANOTHER PENTAGON?—General Services Administration proposes constructing a 2.3-million-sq-ft office building for the Defense Department, which now overflows the Pentagon and has space in 51 buildings.

BASE A BUST—Subcontractors who bagged pieces of the Navy $20-million seaplane base project at Harvey's Point, N. C., are holding the bag this week after the Navy's decision to terminate contracts on an experimental plane. One sub says he lost $40,000 because "the Navy has purposely delayed getting the job done." He said $250,000 worth of his equipment had been tied up for 12 months on a job that shouldn't require "more than 30 days." Prime contractors were lucky. Their contracts called for extra pay for every day of Navy delay.

ON WITH THE WORK—Michigan's financial crisis, which had stopped some construction jobs, has been resolved. The House and Senate approved a tax bill that will raise $128 million annually. The state has owed more than $4 million to contractors, suppliers and other creditors.

TABLES TURNED—While the construction industry continues its word campaign against industrial firms doing construction with their own forces, one contractor has taken the bull by the horns. The Fluor Corp., Los Angeles, has won an unusual plant maintenance contract: The contractor handles all maintenance, the owner none. A subsidiary, Fluor Maintenance, Inc., will maintain machinery, make tool changes and general repairs, and operate power facilities at the Emeryville, Calif., manufacturing unit of Pabco Division of Fibreboard Paper Products Corp.

UP AND ATOM—The Philadelphia Electric Co. will design, construct and operate a high-temperature, gas-cooled nuclear reactor at Peach Bottom, Pa. The $24.5-million plant will have a graphite-moderated, helium-cooled nuclear reactor producing 40,000 kw.

UNDER OR OVER?—The Pennsylvania Turnpike Commission wants to build seven new two-lane tunnels on the pike section between Pittsburgh and Carlisle. The new tunnels would go next to seven existing two-lane tunnels, which are bottlenecks on the four-lane highway. Enabling legislation now before the state legislature would permit the commission to build roads over the mountains as an alternative.

LOS ANGELES INTERNATIONAL AIRPORT,
COMPLEX I, EAST-WEST RUNWAYS
Los Angeles, California

Owner:	City of Los Angeles
Architect:	Parsons and Luckman, Paul R. Williams, Welton Beckett & Assoc.
Engineer:	Donald B. Warren Co. and S. B. Barnes
Contractor:	Griffith Company
Laboratory:	Bureau of Standards, City of Los Angeles
Manufacturer:	Griffith Company
Structure:	Paving concrete

Give CONCRETE INCREASED STRENGTH AND GREATER DURABILITY...WITH...

MARAON MARACON

WATER-REDUCING ADMIXTURES for CONCRETE

1 IMPROVE CONCRETE QUALITY: —

MARACON® promotes more complete hydration of cement particles and permits a substantial reduction in the unit water content without loss of plasticity or consistency of the mix. Low water content means greater durability and resistance to weathering.

A. Minimize shrinkage in concrete before and after hardening, due to lower water content and more complete hydration of cement.
B. Decrease permeability.
C. Achieve greater density and higher durability factors.

2 LOWER CONCRETE COSTS: —

A. Maintain slump and workability at low W/C ratios.*
B. Attain higher strengths without increasing cement content of a mix.**
C. Permit economical redesign of conventional concrete mixes.

*Decrease water by as much as 20% . . .
**Increase strengths by as much as 40% . . .
depending on the mix design.
(The above figures are not represented as maximum. Greater percentages have been achieved in both respects.)

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Truscon Laboratories
Division of
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(Mississippi only)
Ready-Mix Concrete Company
Meridian, Mississippi

Use the coupon for more information.

MARATHON • A Division of American Can Co.
CHEMICAL SALES DEPT. • MENASHA, WIS.

Send additional information on Maracon to: —

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E-99

MARACON also reduces water requirements in concrete mixes containing pozzolanic materials.

MARATHON
A Division of American Can Company
CHEMICAL SALES DEPARTMENT
MENASHA, WISCONSIN

WASHINGTON OBSERVER

- **Will public works veto stick?**
- **Construction changes caught in labor snarl**
- **Fight looms over sewage disposal grants**

● **President Eisenhower's veto of the public works bill may backfire.** Democrats are increasingly angry with the President.

If the veto is sustained, some influential Democrats threaten to tack the bill onto the foreign aid bill, which is very close to the President's heart.

If that should happen, and if Mr. Eisenhower should veto the tandem, Democrats would scale down the public works bill by removing the scores of unbudgeted new starts that offended the President.

But the Democrats' rising temper suggests that they would also reopen the foreign aid bill and cut it even deeper.

The critics of big-scale foreign aid think that such a sequence of events would provide them with new strength.

—

● **Building trades unions face another failure in their decade-long try at getting special Taft-Hartley amendments.** The Congressional snarl over tough labor law reform has again taken a toll of changes specially designed for the construction industry.

Already down the drain are these provisions sought by two of the unions: (1) giving the unions the right to sign contracts before workers are hired; (2) permitting a union shop clause that would take effect after a worker has been on the job only seven days, instead of 30 days.

Still up for consideration in the legislation now being worked on is language that would permit common site picketing in the construction industry. That is the provision of Sen. John F. Kennedy (D., Mass.) to permit a union to picket a common construction project involving neutral contractors. The proposal has been endorsed by President Eisenhower, but is strongly opposed by the Associated General Contractors and by Congressional proponents of the tough Griffin-Landrum bill voted by the House. AGC says the provision would open "loopholes in the protection already offered against secondary boycotts in the Taft-Hartley Act."

—

● **A big boost in sewage disposal grants will be passed by Congress but will meet an almost certain veto. An attempt to override the veto would be close.**

The Senate Public Works Committee has approved a boost in annual authorizations from $50 million to $80 million; the House has stepped it up to $100 million, and will probably compromise close to the Senate's figure. If Congress overrides the President's veto on the pending public works appropriation bill, the pattern may be set for a second override on the sewage treatment measure.

MESS IN MOSCOW

Whatever the reason for the dusting of the concrete floors at the American Exhibition in Moscow, it is abundantly evident that Russian concrete craftsmanship is not up to the standards that we take for granted in this country, whether for a mighty showplace or a lowly farm structure.

Witness the New York Coliseum, where the Soviets recently held a 6-week Exhibition, visited by over a million Americans. The Coliseum has been host to more than 100 exhibitions, and millions of people have walked its floors. The concrete in these floors is as good today as the day the Coliseum opened in 1956.

Lone Star was proud to supply much cement for the Coliseum. We are even more proud of the high-grade work of American concrete craftsmen, many of whom use our 'Incor' exclusively for the construction of quality floors.

LONE STAR CEMENT CORPORATION

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100 Park Avenue, New York 17, N. Y.

Offices in most major cities

SATISFACTION IN NEW YORK

Outlook: Bright, But Not Shiny

- **New construction business will increase 3% next year, another 4% in 1961, which would approach the record set in 1956.**

- **Public works will drop, while private work will continue to rise. Biggest gains will come in industrial and commercial building.**

Heavy construction contract volume in the next two years will continue the upward climb that started with the strong recovery of 1958.

In 1960, contracts are expected to climb 3%, to $20.83 billion. That will be on top of 1959's estimated rise of 6% over last year to a total of $20.3 billion.

Then in 1961, ENR forecasts that contract volume will total $21.6 billion. That would be 7% greater than this year, 4% above the forecast for 1960, and only a shade under 1956's record of $21.7 billion. (For the economy as a whole, McGraw-Hill's economics department forecasts an increase of slightly more than 3% in gross national product in 1960).

There will be some major shifts, however, in the construction market mix. Biggest change will be decline in public works next year. But the dip in this market will be more than offset by a strong rise in the over-all private construction market.

Big gainers next year among major types of construction will be:

- **Industrial building, up 33%**—on top of an estimated 65% jump this year.
- **Commercial building, up 11%.**
- **Waterworks, up 12%.**

Increases are also expected for sewerage, up 7%, and earthwork-dams-waterways, up 6%.

It will be those five major types of work that will have to lift next year's new business above the current year.

While total volume is expected to be up in 1960, the rate of increase will be less than in either the recovery year of 1958 or in 1959.

Reason: The postwar boom in public works is slowing. State and municipal construction awards this year will drop 8% under last year's all-time high, to $7.9 billion. And they will drop another 6% in 1960, to $7.4 billion.

Here's why the state and local public works market has turned soft.

Highway and bridge construction contracts have dropped because of inadequate federal funds. Unless Congress resolves its political differences and comes through with financing measures for the Interstate system, revenues needed to sustain the program at its previously authorized rate will be cut back.

Even under the proposals being argued about in Washington (see p. 19), drops in Interstate contracts appear inevitable for fiscal years 1960, 1961 and 1962.

About three out of every four state highway departments have halted Interstate contracting or bid calls in recent weeks. Until these states know the amount of federal reimbursement they can expect, the hiatus in awards can be expected to continue. (Highway contract awards in August as reported by ENR fell to only $51 million per week on average. This is 29% below July's weekly average and 45% under the August record set last year).

The drop in highway and bridge awards comes at a bad time for contractors. Reason: New public works projects have been moving into the planning stage at a slower pace. That's another big reason for the decline in state and local public works. ENR figures show the down trend in planning started as early as 1956. The decline was gradual until 1958, and then the slide took on proportions large enough to indicate a break ahead in the public works boom.

The planning decline stopped a few months ago, but there is no evidence of new rise in the making.

State and municipal contracts will continue on the downgrade, because it takes two or more years for the average project to pass through the planning stage into the construction contract stage. Therefore, an upturn in proposed state and local projects, when it comes, would take about two years to show up as a reversal in the contract awards decline.

And although there is a huge volume of highway and bridge construction in the planning stage, lack of funds will stall many projects. Highway awards may not recover from this jolt until 1961, depending on what kind of financing plan is finally cleared by Congress.

There are bright spots. Brightest are waterworks and sewerage.

Both types of work are predicted to set new highs in 1960. And while waterworks should hold steady in 1961, look for sewerage awards to continue the rise in that year.

Biggest potential waterworks construction market is California. It is just starting on its proposed $1.7-billion water resources development program. Only hitch: The big upsurge in awards there won't come unless and until the voters in 1960 approved the $1.7 billion in bonds that will pay for the construction. If the bond issue is passed, and ENR's forecast assumes that it will be, awards for earthwork-dams-waterways will also rise.

In the over-all picture, however, the 1960 and 1961 construction markets will be rescued by private work. ENR forecasts that next year, private contract volume will rise 9%, to a total of $10.9 billion. That will be superimposed on 1959's 29% jump over 1958. In 1958, private contract volume tallied $7.7 billion.

There should be another increase in 1961—about 12% above the estimate for all of 1959.

This year's big rebound in industrial building awards is expected to continue next year. They will go up by 33% to $3.9 billion, more than double the 1958 low. The total, however, will fall well short of 1956's record $5.3 billion.

Sharp ups and downs are characteristic of the industrial building market. And in 1961, this market will run true to form. In that year, ENR predicts that industrial building contracts will drop 30%, coming to $2.7 billion. That would be slightly under this year's estimated volume of $2.9 billion.

The 1961 drop in industrial building contracts will stem from the vigor of

Forecast: Heavy Construction Contracts for '60, '61

	1958 Actual	1959† Estimate	Change '58-'59	1960 Forecast	Change '59-'60	1961 Forecast	Change '60-'61	Change '59-'61
ALL HEAVY CONSTRUCTION	$19,165	$20,300	+ 6%	$20,825	+ 3%	$21,620	+ 4%	+ 7%
By Ownerships								
Private	7,730	10,000	+29	10,875	+ 9	11,150	+ 3	+12
Public	11,435	10,300	−10	9,950	− 3	10,470	+ 5	+ 2
State & Municipal	8,609	7,920	− 8	7,425	− 6	7,695	+ 4	− 3
Federal	2,826	2,380	−16	2,525	+ 2	2,775	+10	+17
By Type of Work								
Public—								
Waterworks	306	425	+39	475	+12	475	0	+12
Sewerage	618	675	+ 9	725	+ 7	765	+ 6	+13
Bridges*	714	800	+12	725	− 9	650	−10	−19
Highways	3,729	3,300	−12	3,000	−10	3,200	+ 7	− 3
Earthwork—Dams—Waterways	1,045	800	−23	850	+ 6	1,050	+24	+31
Buildings, excl. Housing	2,610	2,400	− 8	2,300	− 4	2,400	+ 4	0
Housing	1,055	600	−43	465	−22	430	− 8	−28
Unclassified**	1,369	1,300	− 5	1,410	+ 8	1,500	+ 6	+15
Private—								
Building, Total	7,290	9,550	+31	10,250	+ 7	10,400	+ 1	+ 9
Mass Housing	3,739	4,400	+18	3,900	−11	5,100	+30	+16
Commercial	1,795	2,250	+25	2,500	+11	2,600	+ 4	+16
Industrial	1,756	2,900	+65	3,850	+33	2,700	−30	− 7
Unclassified #	429	450	+ 5	625	+39	750	+20	+67

†Based on actual 7 months plus 5 months estimated
*Includes private bridges
**Mainly airports, missile bases, tunnels
#Mainly pipelines, transmission lines & private hydro

ENR Data

the 1959-'60 expansion, which will provide sufficient production capacity to handle the growth in demand during the economic recovery of 1958-'60.

Commercial building awards should set a new high this year with a 25% rise over 1958 to $2.3 billion. That record will topple in 1960, when those awards will rise 11%, to $2.5 billion. Then in 1961, another new record will be established with awards of $2.6 billion for a 4% rise above 1960's total.

Mass housing contracts will slow down during the remainder of this year. The decline will continue through 1960. A sharp tightening in the supply of mortgage credit, relative to demand, accounts for the predicted decline in housing contracts.

And next year, when the industrial building upturn hits full stride, businessmen will be taking increasingly large amounts of money out of the capital market. This demand, added to the regular and gigantic short-term demands of the government, will accentuate the homebuyer's difficulty in obtaining government-backed mortgages.

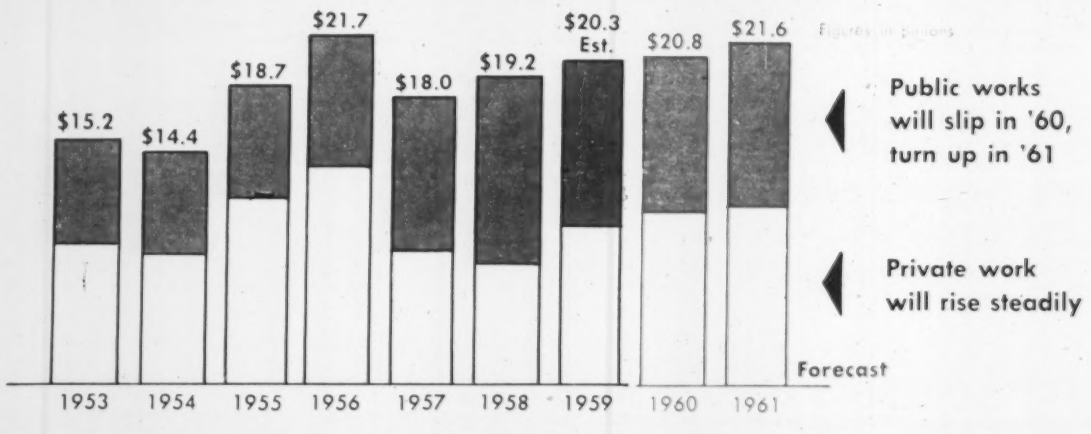
Lenders are already becoming reluctant to make financing commitments to builders. Therefore builders are cutting back on plans for next year.

Result: The 1960 mass housing market will slide 11% below the estimated 1959 contract volume of $4.4 billion.

Bright spot: The expected drop in industrial building in 1961 could trigger a brisk recovery in mass housing by easing the mortgage credit squeeze.

Federal construction contracts will reverse their 1959 decline next year, adding weight to the expanding private market. Combined, they will more than take up the slack in state and municipal public works.

How Private Work Is Moving Ahead of Public



Form Collapse in Atlanta Kills Worker

One workman was killed and 15 injured in Atlanta, Ga., last week when part of second-floor slab collapsed while being cast (picture).

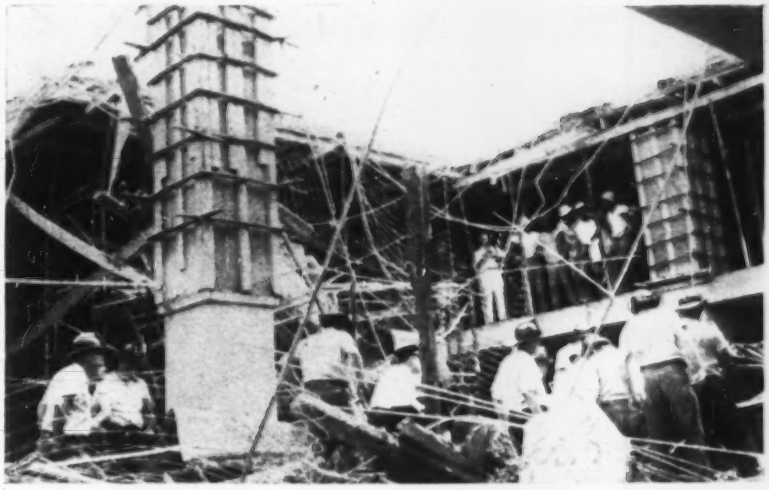
The failure came soon after workmen began a 15,000-sq-ft concrete pour on the 30,000-sq-ft second floor of the Georgia Power Co.'s $6-million, 22-story office building.

First a 21x27-ft bay dropped 26 ft to the first floor, carrying part of the concreting crew with it. Then as workers rushed to aid the trapped men, a second bay collapsed on them.

Forms consisted of metal pans on plywood decking arranged to make a 4-in.-thick slab with 14-in.-deep ribs spaced 37 in. c-c. Metal pipe scaffolding, arranged on 4-ft centers, supported the plywood deck. Vertical scaffold legs were extended above and below the scaffold frames with the telescoping legs locked in place by metal pins.

Concrete for the second floor was hoisted by bucket and then moved across the deck by push-buggy.

General contractor is the Henry C. Beck Construction Co., Dallas. Erection of the shoring and metal pans is subcontracted to Southeastern Erection Co.



Second-floor forms dropped 26 ft to street level during concreting.

Cause of the failure is not yet known. But the Beck project manager, Robert Holder, Jr., said, "It seems that the shoring was faulty in some way." City Building Inspector William B. Wofford said there seemed to be no sign of negligence; he declined to comment on the cause.

Bhakra Diversion Tunnel Fails

A hoist chamber collapsed in Bhakra dam's right diversion tunnel two weeks ago and loosed a flood that drowned 10 workers and caused over a million dollars damage to the powerhouse.

The mishap will delay power production at least six months, but the dam will be completed on schedule, according to India's Minister of Irrigation and Power.

Bhakra Dam is the key unit in India's $360-million Bhakra-Nangal power and irrigation project (ENR Dec. 11, 1958, p. 34).

The right diversion tunnel and its hoist chamber (for control of temporary gates in the tunnel) had almost completed their usefulness. They were to go out of service next month.

The Punjab government constructed the 50-ft diversion tunnels on force account, starting work in 1948. The tunnelers encountered extremely bad rock conditions in driving the right tunnel and excavating the temporary hoist chamber above it. The poor condition of the rock probably caused the failure.

The first two (of five) 90,000-kilowatt generating units were installed in the powerhouse this year. They were scheduled to start generating power for a new fertilizer factory next March. Start-up will now be delayed till later in the year.

Scheduled completion date for the dam was recently extended from February, 1960, to the summer of 1961 because of project changes and difficulties in drilling and grouting. Ironically, the revised timetable was reported to the Indian Congress the day of the accident.

The tunnel failure won't affect the new schedule, the power and irrigation minister stated last week. Nor will the new schedule materially affect benefits of the project, he said. The original plans for partial storage are being carried out: 470,000 acre-ft were stored and used last year and 1,750,000 acre-ft this year. Possibly 4,000,000 acre-ft will be used next year.

Work Pushed at Quake-Jarred Dam

Montana Power Co. engineers are still attempting to assess the full extent of damage to quake-jarred Hebgen Dam. To date, there's still no evidence of any major damage (ENR Aug. 27, p. 25).

Engineers are now drawing down the reservoir at about 2,800 cu ft per sec to get the level down below the entrance of the dam's 14x14-ft emergency spillway channel, which was badly cracked.

The regular spillway, a pipe under the dam, is functioning normally. A small amount of water is leaking under the damaged emergency spillway, but no major leakage is detectable anywhere, according to chief engineer Larry Jones.

The main job created by the earthquake is downstream seven miles (ENR Aug. 27, p. 25). Army Engineers are working feverishly to reduce the hazard created by the huge slide blocking the Madison River gorge.

The artificial lake backing up behind the slide has reached a height of more than 100 ft.

The Corps mustered men and equipment hurriedly and bulldozed a 1,300-ft road to the crest in 24 hours. The next step was to lower the crest of the slide 20 ft across a width of 300 to 500 ft at the upstream end. That will limit the maximum head attainable.

The next step is to cut down a series of humps on the top of the mile-long slide and fashion a flow path from the upstream end to the downstream end. The flow path will carry the normal flow of the river once the newly formed lake reaches its crest.

Army digs in for under-snow facility in Greenland.

A-Plant to Heat Camp Under Ice

A prefabricated nuclear power plant will supply heat and light for an all-year under-snow camp on the Greenland icecap, if permission comes through as expected from the Danish government to erect the atomic facility. It will be one of the first practical applications of APPR, the Army Package Power Reactor (ENR July 12, 1956, p. 45).

An Army Engineer working party this summer began construction of snow tunnels for the all-weather community, designed to provide year-round living and working quarters for 100 polar researchers some 700 miles north of the Arctic Circle. A go-ahead from Denmark is all that is needed to clear the way for shipment and assembly at the site next year of the uranium-fueled power plant.

Nuclear power is a natural for the isolated location. 138 miles from the Camp Tuto headquarters of the Army's Polar Research and Development Command. Tuto itself sits on the coastal gravel strip at the edge of the icecap, 14 miles from Thule Air Base.

It was for just such remote installations that the Corps of Engineers undertook to develop knockdown nuclear plants made of components that can be shipped by air.

A plant of some 1,500-kw capacity to serve the new under-snow community, named Camp Century, has been under contract since last January with Alco Products, Inc., of Schenectady, N. Y. Alco earlier built the Army's prototype package plant that went into operation at Fort Belvoir two years ago. Experience gained there has guided the engineer-contractor team in design.

Without a nuclear power plant, problems of fuel supply would wreck the feasibility of an all-year establishment at the Camp Century site. Fuel oil delivered in Greenland may cost as much as $42 a barrel, and the hazards of moving it by snow train over the icecap are prodigious. By contrast, a reactor core weighing only 700 lb, including 43 lb of uranium-235, can generate as much energy as 36,000 barrels of oil.

Some 30 elements make up the nuclear power package that Alco is fabricating at its Dunkirk, N. Y., works. If the Danes assent, these components will be flown to Greenland starting about May of next year. By October 1, if all goes well, the reactor-generator will be set up, tested and ready to operate. A portion of the camp also will be completed and habitable by then.

Back of the Camp Century project lie five years of polar research on Greenland itself and even more years of study, testing and experiment at other Army Engineer research centers. One of many useful results of these research efforts has been a big advance in knowhow for utilizing snow and ice as building materials. Some of this recently acquired knowhow is being put to use in constructing the snow tunnels for Camp Century.

Trenches for the tunnels are cut by Peter Snow Millers (picture) rotary plows of the type used in the Swiss Alps to keep the passes open in winter. These snow excavators cut hard-packed snow to depths of 20 ft or more and throw the spoil clear of the top. In addition, they produce a machine-milled snow with superior properties for setting up a firm mass with measurable structural strength.

These qualities make the snow suitable for use in arched roofs over the tunnels. The snow is placed on steel arch forms, which are removed after the roof has developed strength.

Roof span of the tunnels is minimized, and the volume of tunnel excavation is reduced, by using a step-back widening technique for each successive cut as the miller digs down to full width of 20 ft or so at the bottom. This procedure gives width where it is wanted, on the floor of the tunnel, with stepped-in walls above and a narrow opening at the top to be closed by the arch roof.

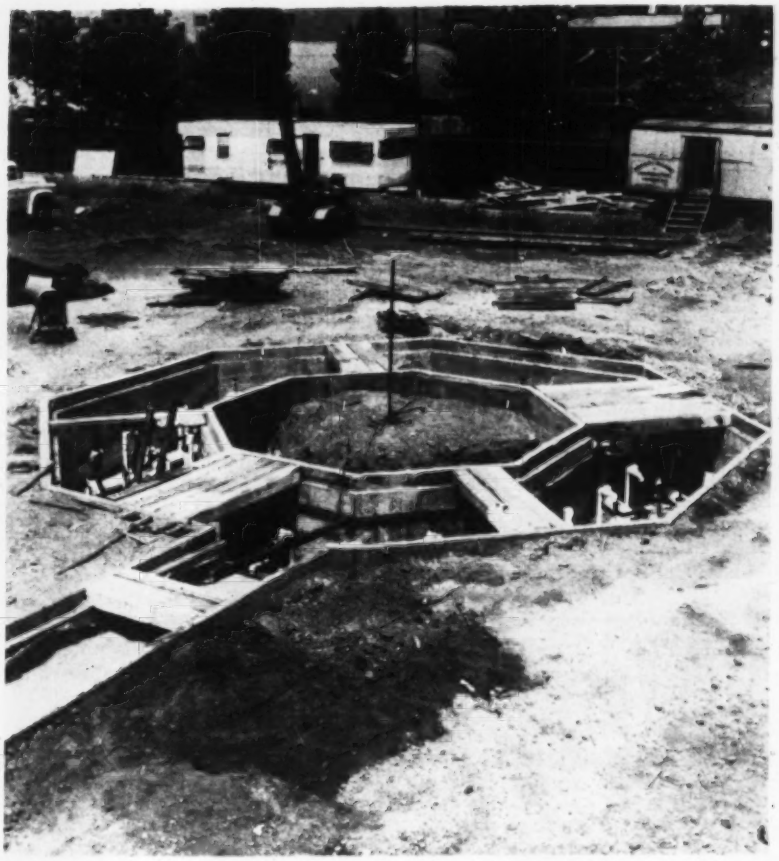
First tests of this tunneling technique were made at an experimental under-snow camp, now known as Site II, which was opened three summers ago on the icecap about 220 miles east of Tuto (ENR Feb. 9, 1957, p. 24). A Peter Snow Miller at Site II last summer was able to cut 1,000 ft of trench, of the type excavated this year at Camp Century, in 100 hours.

Site II proved that an under-snow camp is a practical place to live in an arctic environment. Early success of the experimental camp, which housed 125 to 140 men, led to the idea for a permanent all-year installation.

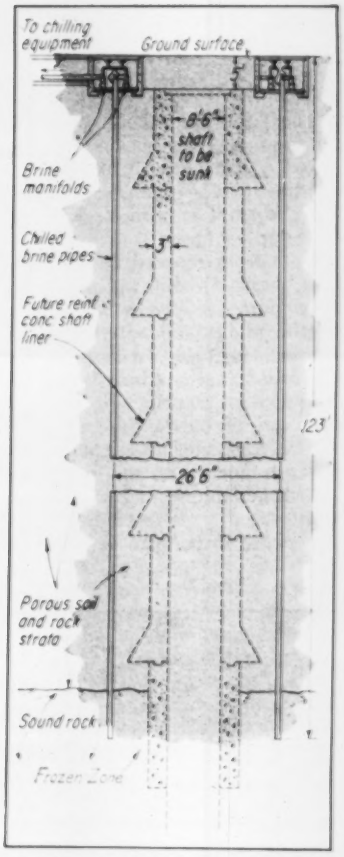
At Camp Century, the permanent living quarters, shops and laboratories will be constructed of specially insulated, prefabricated shells. Ventilation, sewage disposal and water supply systems will be designed to operate even when the outside temperature drops to −70 F. A 10-bed hospital with an operating room will take care of health emergencies, and recreational quarters will be carefully planned to relieve the boredom of isolated living through the dark arctic winter.

Century's all-year operation, however, will be no bore to Army scientists, who look forward to accelerated arctic research, carried forward continuously both on the icecap and in the laboratories at the camp.

A future possibility, with no firm plans made yet, is an under-snow road linking Camp Century with Tuto and the Greenland coast. This covered transportation artery would protect supply trains from surface hazards that include winds up to 125 mph and arctic white-outs, which reduce visibility to zero.



From shallow pipe gallery surrounding top of future shaft . . .



. . . Coolant pipes extend 123 ft.

Deep Freeze to Keep Shaft in the Dry

A New York City tunnel contractor is borrowing the old mining technique of earth freezing to seal a deep shaft excavation in Manhattan.

Poirier & McLane Corp., working on a $6.5-million contract to drive a sewer tunnel under the East River (ENR Oct. 30, 1958, p. 28), is freezing a solid cylinder of earth about 36 ft in diameter and 123 ft deep at the Manhattan end of the tunnel route. The cylindrical mass extends from ground surface to bedrock plus a few feet. When it is solidly frozen, the contractor will sink a 14½-ft shaft through the center, line it with 3-ft-thick reinforced concrete (finished shaft diameter, 8½ ft) and then allow the earth to thaw.

Below the frozen zone, the tunnelers will drive almost another 200 ft down through sound rock. Then they will level off and bore through rock under the East River. Other crews will be working to meet them from another shaft some 8,000 ft away at the future Newtown Creek sewage plant.

Pumping would have been the most obvious means of keeping the excavation dry. But the New York City Public Works Department ruled out anything that might cause groundwater depletion and the attendant danger of soil settlements under nearby apartment houses. Left with a choice of air under pressure or freezing, the contractor chose the latter. It's too early for an economic comparison, he says.

Main components of the freezing system are two 125-hp reciprocating ammonia compressors and a "picket fence" of brine pipes encircling the full depth of the cylinder being frozen.

The brine pipes, 21 in all, are sunk vertically on the periphery of a circle 26½ ft in diameter. The upper ends of the pipes connect to supply and return manifolds, which encircle the site in a shallow trench.

Each pipe is actually two pipes—a 2-in. supply inside a 6-in. return pipe. Chilled brine from the refrigerating units flows through the smaller pipe to the bottom and returns to the surface through the bigger pipe.

The refrigerating plant started continuous operation August 3 and is expected to take several more weeks to freeze the shaft area solid. Right now the pipes are surrounded by small solidly frozen earth cylinders. These will increase in size until they overlap and eventually encompass the entire zone to be frozen. Then excavation starts.

The contractor will excavate with the drill-and-blast method. He expects to concrete in 10-ft increments as the excavation proceeds downward.

Since the freezing equipment will be in use such a short time on this job (about 90 days), it was designed with resale in mind. Each of the two refrigerating machines is a packaged, platform-mounted unit capable of freezing a standard 85 x 185-ft skating rink.

York Corp., York, Pa., built and installed the freezing equipment. Poirier & McLane Corp. will operate and maintain it. John Decker is project manager, U. S. Zanetti, project engineer and A. Amisano, job superintendent for Poirier & McLane. Charles Fail, Painesville, Ohio, is consulting engineer of the freezing job.

Earth freezing has been used in mining since the 1880's. Shafts as deep as 3,000 ft have been kept dry and stable by the method.

The Drinks Will Be On Detroit

The City of Detroit has purchased surrounding Wayne County's uncompleted water system for $57.4 million and has a $172-million plan to become water supplier to portions of five more Michigan counties.

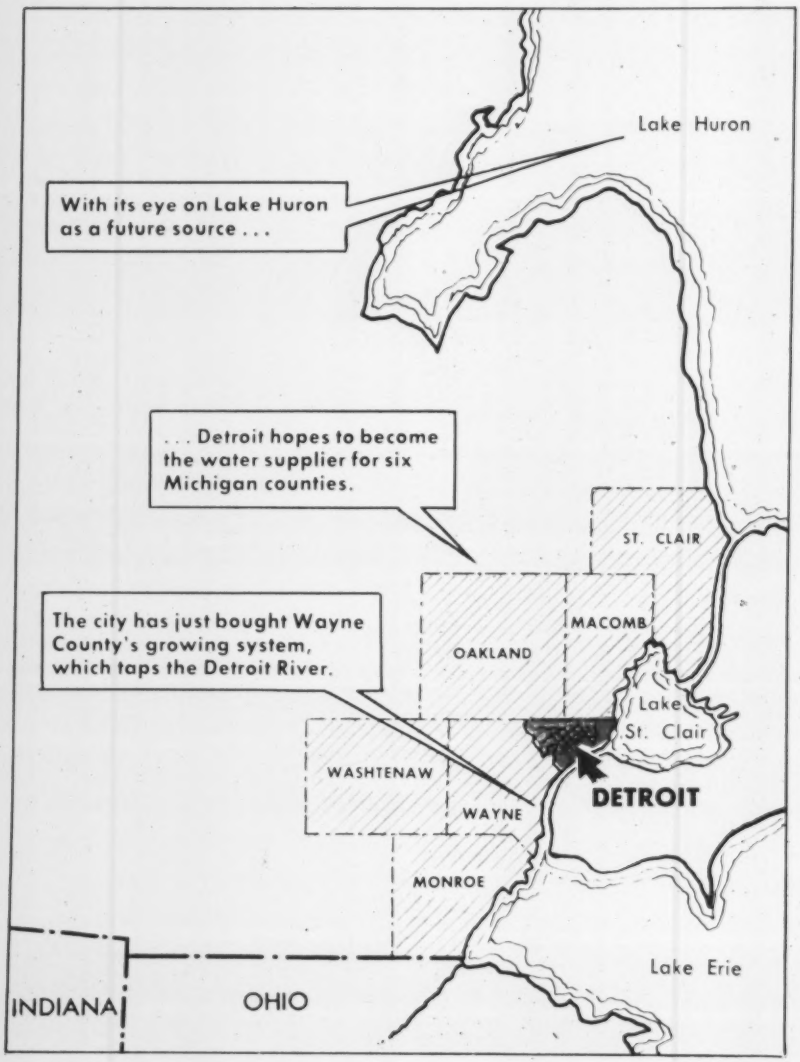
If its newly revealed 20-year program goes ahead, Detroit will add a major Lake Huron supply to its system and will be wholesaling water to communities with total population of 5 million-plus over a large and industrialized area.

Money for construction would come from sale of bonds. If contracts now can be negotiated to supply water for the five-county area, the first aqueduct from Lake Huron could be in service in about seven years, according to a report of the city's Board of Water Commissioners.

Last month the first major step was taken. A contract was finally signed for the transfer of Wayne County's system to the city. Heated controversies surrounding the deal had hardly cooled down.

The city bought an existing system valued at $10 million to $15 million and a $50-million Wayne County project now under construction to take water from the relatively polluted Detroit River.

With its Detroit River intake project under way (ENR Dec. 20, 1956, p. 30), Wayne County was on its way toward being self-sufficient in water supply. But a change of heart that came with a new administration put the city in the market to buy out Wayne County's whole water supply system.



Circumstances leading to the sale were involved. A city taxpayer filed suit on grounds that the extended county system would service some areas now serviced by the city, and the city would lose $1 million a year in revenue. A court injunction held up the sale of general obligation bonds that would have financed about half of the Wayne County expansion. Now that the sale is set, the court case is dropped and the county will be free to issue the bonds.

Under terms of the agreement, Wayne County will build its proposed plant and lease it to the city, which will pay off the purchase price over a period of 30 years. Actual transfer of the county's system to the city will come in 1960 when a first payment of $4 million is to be made.

Detroit officials say their purpose in expanding in the waterworks business is to produce water at lowest cost for the surrounding metropolitan area. G. (for Gerald) Remus, general manager of the city's Board of Water Commissioners, says one central authority for the entire area is the way to do this. Letting the city be that authority rather than setting up a regional agency is considered by observers to be a departure from general current practice.

Detroit spokesmen also see the relatively unpolluted waters of Lake Huron north of the city as a major source ultimately of the water they hope to sell. They have agreed under terms of the purchase to have the Wayne County Detroit River project developed to its first stage of completion as a 150-mgd source. Odds are Lake Huron would be tapped before the county project is ever developed to its ultimate 480-mgd capacity.

Detroit's present water intake is in Lake St. Clair, which is south and downstream of Lake Huron. Plans for reaching up to Lake Huron so far fix a location for an intake. And most new main construction will be done with an eye to Lake Huron.

Oakland and Macomb counties recently had Bechtel Engineering Corp. of San Francisco do a feasibility study on the developing a Lake Huron tap. Detroit wants to line them up as customers and do it for them.

The $172-million city program has approval of the Detroit Board of Water Commissioners and is actually begun. About $1 million worth of work is done and another $6 million to $7 million —mostly new mains—is in the bid stage.

By 1965, it is planned to spend $5 million to $8 million in Wayne, Oakland and Macomb counties. That's in addition to the $50 million going into

(Water, That Is)

the Wayne County expansion project.

By 1975, another $34.6 million would be spent on construction of storage and transmission facilities.

Then would follow an $82.7-million expenditure to bring the first 250 mgd of Lake Huron water into the system.

The $172-million total is in addition to $52-million worth of capital improvements completed in 1955 at the Northeast Pumping Station and a $35-million extension finished this year on the city's Springwell Station.

Consultants to the water board in drafting the 20-year program were Louis E. Ayres of Ayres, Lewis, Norris & May, Ann Arbor, Mich., and Louis R. Howson of Alvord, Burdick & Howson, Chicago. The bulk of design of projects in the program is expected to be done by the city water department's own engineering staff.

Hazen & Sawyer of New York did functional design of the Wayne County project Detroit has bought. Giffels & Vallet and L. Rossetti & Associates of Detroit prepared the plans. A now-completed tunnel to the Detroit River intake was engineered by Parsons, Brinckerhoff, Hall & Macdonald.

Another bit of engineering that has influenced Detroit's decision to become a large-scale water supplier was the report submitted to an intercounty supervisors committee in 1957. It was done by the National Sanitation Foundation at the University of Michigan, with Louis Ayres, Richard Hazen and Abel Wolman of Johns Hopkins University as consultants. It considered four separate programs meet water needs of the six-county metropolitan area.

In effect, Detroit has now picked a program very similar to one of those considered in NSF's report.

Now it remains to be seen whether or how soon Detroit can line up other communities in the area.

Storm Floods Detroit Highways

A torrential hundred-year storm hit Detroit early last week when 2 in. of rain fell in less than three hours and turned the Edsel Ford and John C. Lodge expressways into impassable rivers more than 12 ft deep in places.

At one point on the Ford Expressway, a 200-ft section of pavement buckled when a sewer burst underneath. Westbound lanes at Trumbull will be closed to traffic at least two weeks for repairs; the northbound Lodge Expressway lanes north of Grand Blvd. were also closed.

Mayor Louis C. Miriani called an emergency meeting of department heads to study the problems of flooded expressways.

Irving J. Rubin, executive assistant to State Highway Commissioner John C. Mackie, said the expressways could not handle such heavy rainfalls. "And even if they could, the city sewage system could not cope with the downpour," he added. "Whatever caused the break will be determined; but it will take at least two weeks to repair the damage."

County Highway Engineer Joseph W. Gross said, "The expressways' sewers and pumps are designed to handle a 10-year flood or better . . . Engineers could design drainage systems for 1,000-year-flood capacity, but it is not economically feasible."

DPW Commissioner Glenn C. Richards agreed that building expressway drainage to greater capacity is not financially feasible, and insisted that the present system is "entirely adequate for 'normal' emergencies."

"We will determine why the city sewer main broke; apparently the tremendous rush of rainwater caused a massive back pressure, which exploded the main," he said. "However, the sewer bulkheads were all inspected after a similar flood in 1957 closed both the Lodge and Ford Expressways for several hours, and I thought that had been corrected." (The bulkheads plug sewer lines that once crossed where the expressways were built.) "After the '57 flood, we dead-ended most of the cross sewers at the nearest manhole to prevent this happening again, so we will have to recheck all of them immediately," Mr. Richards said.

North Carolina Governor Supports Road Officials

North Carolina's Gov. Luther Hodges has backed up his controversial State Highway and Public Works Commission by reappointing its chairman, J. Melville Broughton, and three other members.

Governor Hodges two years ago pushed through a reorganization of the commission that reduced its membership from 14 to 7, placed it under the same budget controls as other state agencies and gave it a new accounting system (ENR June 27, 1957, p. 135).

A bill designed to restore the commission to 14-man membership was defeated early this year.

New Building Code

Wilmington to replace overcomplicated code

Toss it out. That's what Wilmington, Del., plans to do with its overcomplicated, outdated, amendment-dragging building code.

While many cities struggle to update their building codes with a never-ending string of amendments, Wilmington plans to settle the problem with a brand-new code. The proposed code—if enacted by the city council and approved by the mayor after public hearings in September—will repeal all provisions of the old code and all subsequent amendments and changes.

The city's original building ordinance was adopted 35 year ago. A number of revisions in the regulations were made 10 years later, and since then there have been a large number of amendments.

Wilmington's zoning map has been amended many times in a piecemeal fashion. As a result, the present regulations are very involved and difficult for a layman to interpret, said Harold M. Lewis, city planner who drafted the proposed code.

The new zoning regulations provide for 14 different types of zoning districts, compared with 11 types in the existing ordinance.

A new type of residential district proposed is the row-house district, which would be limited to one-family dwellings.

Three of the seven residential districts would be essentially for apartment houses.

The existing business district would be abolished in favor of two types of commercial districts—one for neighborhood shopping facilities, the other for secondary business centers. A district for heavy commercial uses, including wholesale and storage establishments and bus and truck terminals would also be established. Another district is designed to provide sites for research, light manufacturing and certain storage operations.

The code also places limitations on the ratio between the gross floor area of a building and its lot area.

Other new or proposed controls include:

- Requirements for accessory off-street parking for commercial uses outside the central business area.
- More stringent requirements for off-street parking accessory to residential uses.
- Required off-street loading and unloading spaces in all districts.
- Provisions to control the design of parking lots.
- The establishment of an office of zoning administration.

Housing: Congress Defies Veto

President Eisenhower may be tempted to fire his veto again even before the smoke from his public works veto is cleared (see p. 19). This would be his second shot at the housing measure.

The housing bill passed last week still contains many features the President objects to. The House of Representatives defied veto threats, with a vote of 283-105, in wrapping up Congressional action on the second housing bill of the year. In effect, the President is being challenged to take it or leave it.

If he decides to veto, the bill's backers made it clear they wouldn't try to pass a new bill at this session. If he wants new authority for FHA to insure mortgages, he will have to take the other provisions in the bill as well.

Just before he took off for Europe, Mr. Eisenhower sent a special message to Congress asking that the FHA authority be broken out of the housing bill and passed as a separate piece of legislation. He hinted he would veto the housing bill in its presently drafted form.

But Rep. Albert Rains (D., Ala.), floor manager of the bill, summed it up for the bill's supporters when he said: "We've gone as far as this Congress can to get a bill. . . . This is the last housing bill coming up in Congress this year."

The bill provides for these programs:

• **FHA**—$8 billion in new insurance authority—$2 billion less than in the first bill vetoed by the President. It also prohibits issuing "letters of intent" after Oct. 1, 1960, to insure mortgages. This assures that Congress would have to pass another housing bill next year.

• **Urban renewal**—$650 million to be spent over the next two years. Of this amount, however, the President would have discretionary authority to spend—or not to spend—$100 million. The total package was cut down $250 million from the vetoed bill.

• **Down payments**—Lowered down payment requirements on FHA-insured mortgages. A minimum of 3% was set on the first $13,500; 10% on the next $4,500 above that and 30% for anything over $18,000.

• **Interest**—Interest rates allowable on FHA-insured rental housing and management-type mortgages was raised to 4½% from the present 4¼% ceiling. The interest allowed on cooperative housing was raised to 5%; previously it was 4½%.

• **Other provisions**—$250 million in loans for college dormitories; $50 million for housing for the aged; $50 million for college classrooms and laboratories and $25 million for cooperative housing.

Floating Bridge Plan Lives Again

Washington's attorney-general breathed new life into a proposal to build a second floating bridge across Lake Washington, east of Seattle. John J. O'Connell ruled it would be legal to use King County road funds as a reserve to guarantee payment of the $30 million in bonds needed for construction of the bridge.

Almost immediately, the Guy F. Atkinson Co. of San Francisco, which had submitted a low bid of just under $11 million in April, extended for another 60 days its bid offer to build a floating section of the bridge.

The attorney-general's ruling came at a time when the proposal was considered sidetracked for at least several years. The Washington Supreme Court ruled unconstitutional a 1959 state law intended to help finance the bridge (ENR Aug. 13, p. 26). That law would have authorized the Washington Toll Bridge Authority to borrow money from the state motor vehicle fund, if necessary, to pay off the bonds.

Atkinson's original bid in March called for award of contract within 90 days. When the bridge proposal ran afoul of court action, the offer was extended another 60 days, to August 21. The latest extension, following the court decision, is for another 60 days.

Before the state can award the contract, however, it must sell the necessary bonds. That will probably require another court decision on the constitutionality of a 1959 law permitting the use of county road funds to guarantee payment of the bonds.

Deadline for Airport-Aid Applications Is Near

Applications for federal aid for local airport projects for the fiscal year starting next July 1 must be in by November 30.

The Federal Aviation Agency last week announced a three-month extension.

Nearly $63 million will be distributed about January 1, FAA says.

The same amount will be available this fiscal year. Allocations will be announced November 1. Applications for this year are closed as of this week. The money is available under the two-year extension of the aid-to-airports program that became law in June.

Fallout Shelters

Joint Committee calls for $20-billion shelter plan

Support for adequate civil defense shelter programing is growing in Washington. The latest pitch came this week from a special subcommittee of the Joint Congressional Atomic Energy Committee headed by Rep. Chet Holifield (D., Calif.).

The subcommittee called for a $20-billion civilian shelter program—aimed at protection against radiation fallout more than from initial bomb blast.

Before preparing its report, the group heard testimony from scientists and defense planners.

The group left up in the air the question of how such a program should be financed, and whether the government should pick up the construction bill or leave it to individuals to buy or build their own shelters.

The report urged a shelter program as an arm of U. S. foreign policy, and indicated it would strengthen our position in dealing with Russia. The "total unreadiness" of the U. S. to survive the effects of a nuclear attack invites "possible Soviet nuclear blackmail," the report states.

The $20-billion estimate was based on this theoretical case: The assumption that 224 targets were hit with 263 nuclear weapons having the destructive power of 1.446 billion tons of TNT. A shelter program of the magnitude recommended, the report said, would save the lives of 46 million people and prevent millions of injuries.

The Holifield report follows a proposal by New York's Gov. Nelson Rockefeller for a state fallout shelter program. That plan includes provisions for mandatory shelters in new buildings, refurbishing existing buildings to give maximum protection, and requiring private homeowners to install fallout shelters in their homes—at a cost of under $200 each for "do-it-yourselfers" to several thousand dollars (ENR July 16, p. 27).

Meanwhile, two more homebuilders are offering fallout shelters with their houses.

On Long Island, builders A. Henry Schroeder and Joseph Mazza are showing a house with a 7x8-ft concrete block shelter in the basement. It's equipped with two bunks and shelves for canned foods. "Since some sort of legislation is likely," says Mr. Schroeder, "we see no reason to wait."

In Denver, builder Jack Hoerner has scheduled 50 houses with 10x13-ft shelters under the garage. The shelter is an extension of the basement. Walls are 8 in. thick, the ceiling is 12. thick.

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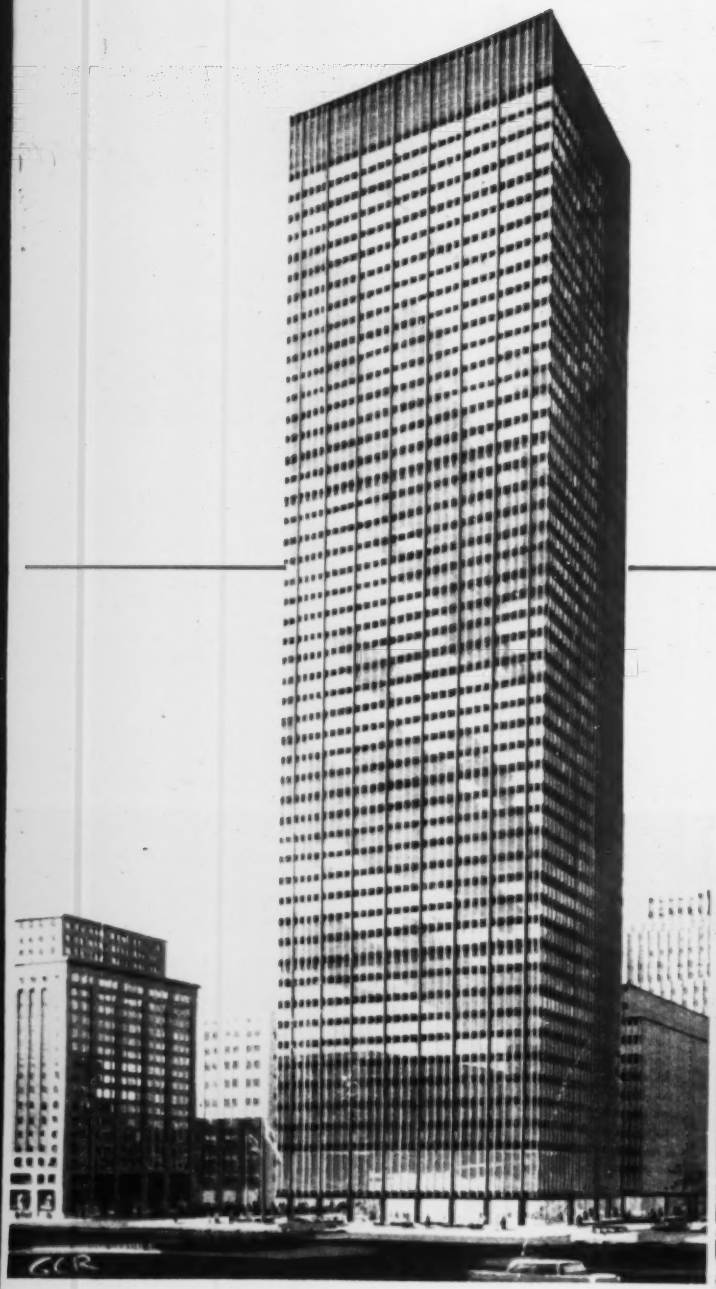
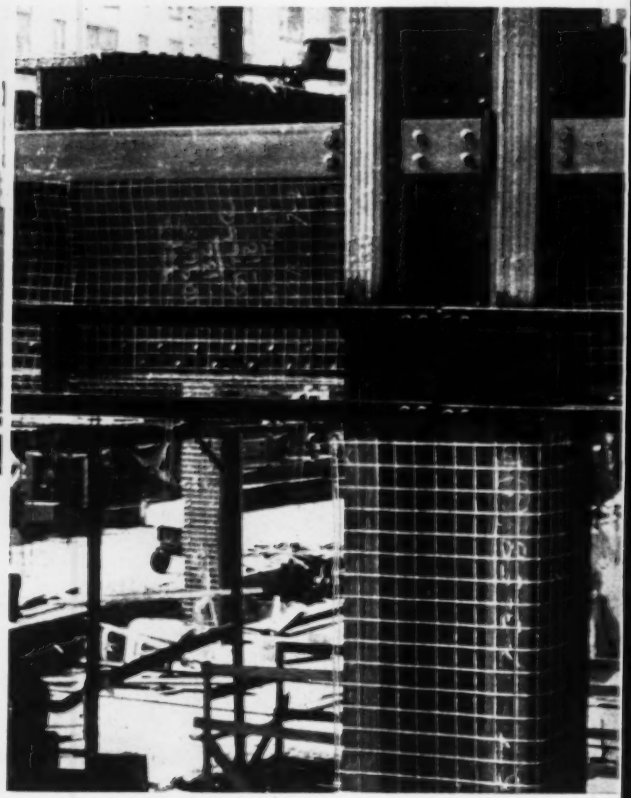
Concrete work in **is reinforced with**

JUST north of Grand Central Station a new skyscraper is rising to join New York's storied skyline. It is the 52-story Union Carbide office building. During the razing of the Hotel Marguery, formerly on the site, and the erection of the new skyscraper, Grand Central trains operated below—on time, without interruption.

USS American Welded Wire Fabric was used throughout this building to add strength and durability to concrete work. To meet the differing requirements of



USS American Welded Wire Fabric style 22-1212 was used to reinforce the thin layer of concrete encasing the structural steel for fire protection. The closely spaced small members of fabric ideally suit it for this reinforcement to prevent crack-causing stresses due to temperature changes and structural deflection. The fabric readily shapes to the steel and retains its rigidity in the bent form. Large sheets can be applied to speed construction.



Architect: ..... *Skidmore, Owings & Merill*
Consulting Engineer: ..... *Syske & Hennesey*
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Fabric Distributor: ..... *Carroll-McCreary Company, Inc.*

new Union Carbide Office Building

USS American Welded Wire Fabric!

concrete slabs, fills and fireproofing, three USS American Welded Wire Fabrics—of varying weights—were used.

American Welded Wire Fabric has long been used successfully and economically in practically every form of structure. It has an enviable record of successful structural application in the world's tallest and largest buildings. For more information on American Welded Wire Fabric, write to American Steel & Wire, 614 Superior Avenue, N. W., Cleveland 13, Ohio.

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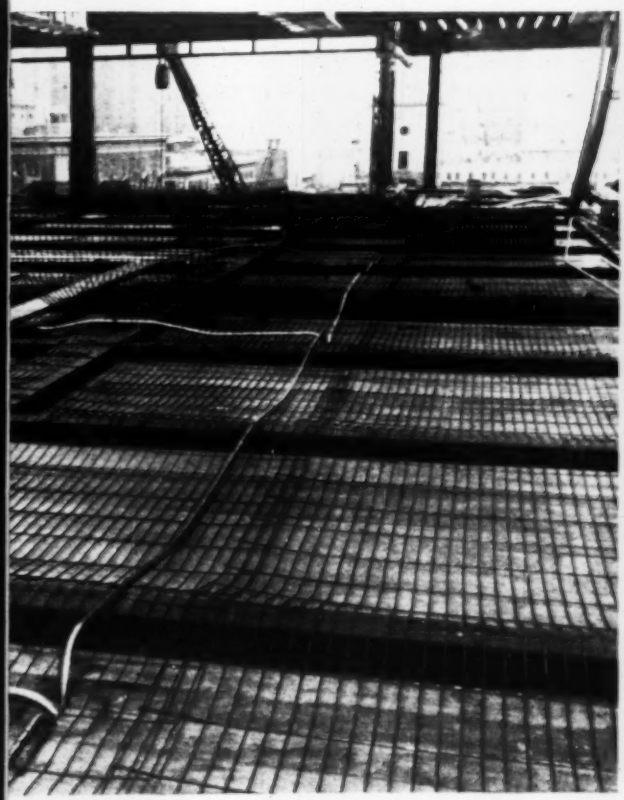
Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors
Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors
United States Steel Export Company, Distributors Abroad

Short span concrete slabs are structurally reinforced with a rectangular style of USS American Welded Wire Fabric. The high yield point of the cold-drawn wires permits higher working stress, thus reducing the amount of steel to be handled and installed. It is easily draped and placed at points of maximum stress due to positive and negative movement. Long fabric rolls speed installation and assures continuity of slab action through continuous reinforcement.

The designers and owners specified that distributed reinforcement be used in the concrete fill over cellular metal decking to prevent temperature and shrinkage cracking. USS American Welded Wire Fabric style 44-1212 was selected. The small diameter closely spaced wires provide the needed protection against unsightly cracking.



Expressway for Oklahoma City

The artist's rendering above illustrates how a two-mile elevated expressway will cut through Oklahoma City four blocks south of the downtown business district.

The crosstown expressway will link principal north-south, east-west and northeast routes in and out of the city. It will have six 12-ft roadways, an 8-ft median, and 6-ft shoulders on each side. There will be four entrance and four exit ramps. The major span arrangement is at the crossing of the expressway over the main line and yard tracks (at right) of the Santa Fe Railway.

Benham Engineering Co., Oklahoma City, is consulting engineer on approximately half the expressway's length.

Around the World . . .

• St. Lawrence speedup—Canada plans to start work this fall on $7.5 million worth of tie-up walls to boost capacity of the Welland Canal. The walls will be located near lock entrances so ships awaiting transit won't have far to travel when their turn comes. Thus the interval between transits will be shorter. Welland's series of locks takes traffic through the 326-ft elevation difference between Lake Erie and Lake Ontario.

• Honors for engineers?—Scientists and engineers who achieve outstanding success in research or development would be honored with a "National Medal of Science" and tax-free cash awards of up to $10,000 under a bill approved by the House Space Committee.

• Convertible schools?—New York City's Board of Education will study dual-purpose and prefabricated, mobile schools. The idea is to design the schools for eventual use as business or manufacturing units after their role as schools is past.

• First belt link—An $18-million, 4,223-ft bridge over the Cuyahoga River Valley, the first link in a $77-million Inner Belt Freeway, has been dedicated in Cleveland. The bridge will handle 95,000 vehicles a day.

• Nicely accidental—Arizona highway department personnel have been warned to stop land speculating—where highways "just happen" to be going—or risk dismissal. The edict followed allegations that a group of high-ranking department employees had bought strategic land along the route of a proposed road.

• Kariba's a bargain—Cost of building Kariba Dam is running 9% below estimates. It's likely to wind up $17 million to $20 million under the original $218.4-million estimate.

• Longest vertical lift—The world's longest vertical lift span—558 ft center to center of bearings—was put into operation last wek as part of a 1,647-ft single track crossing of the Arthur Kill between Elizabeth, N. J., and Staten Island, N. Y.

New Public Buildings Act Promises Quicker Starts

Tighter and smoother controls that promise quicker starts for new federal buildings will take effect as soon as the President signs a bill that cleared Congress last week.

The new Public Buildings Act of 1959 sets up for projects financed by direct appropriations the same consolidated control system that worked well under the defunct lease-purchase program (ENR Aug. 6, p. 28).

All proposals for general-purpose buildings will pass through the General Services Administration to the Public Works Committees of the House and Senate. Approval by the two committees will authorize a project for appropriation and construction, eliminating the hodge-podge process of authorizing buildings for various agencies by Congressional action on separate bills.

Committee approvals are expected to start coming through soon after Congress returns to Washington next January. GSA has 20 old lease-purchase projects totaling $500 million that can be resubmitted quickly. And it can work up 100 or so additional projects from a waiting list on hand when the lease-purchase law expired in 1957.

The Atomic Energy Commission is exempted from the bill. AEC had argued that its buildings are special-purpose structures and should not be handled by GSA. Other special-purpose buildings on military bases, Army Engineer and reclamation projects, and the like, already had been exempted in the House bill.

Slab Collapse Injures Five On California Project

A just-cast section of 14-in.-thick concrete slab fell 22 ft from the first-floor level of Oakland's Hall of Justice building last week, injuring five workmen.

An Oakland official said the accident wouldn't seriously affect the construction schedule on the $8-million building, which was started last September.

Exactly what caused the 20x40-ft slab to collapse isn't yet known. Oakland inspector Nils Annonson reports that manufacturers' specifications for spacing of adjustable steel shores under the slab had been followed exactly. The general contractor, Johnson, Drake & Piper, eliminated shoring as a possible cause of the accident.

Below the first floor, basement slabs cast several months ago were undamaged by the impact of the falling forms, reinforcing and concrete. Inspectors are still checking horizontal steel scaffold beams used to support the formwork.

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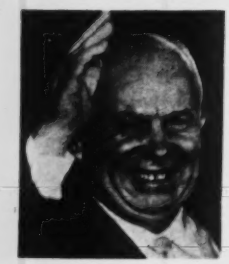
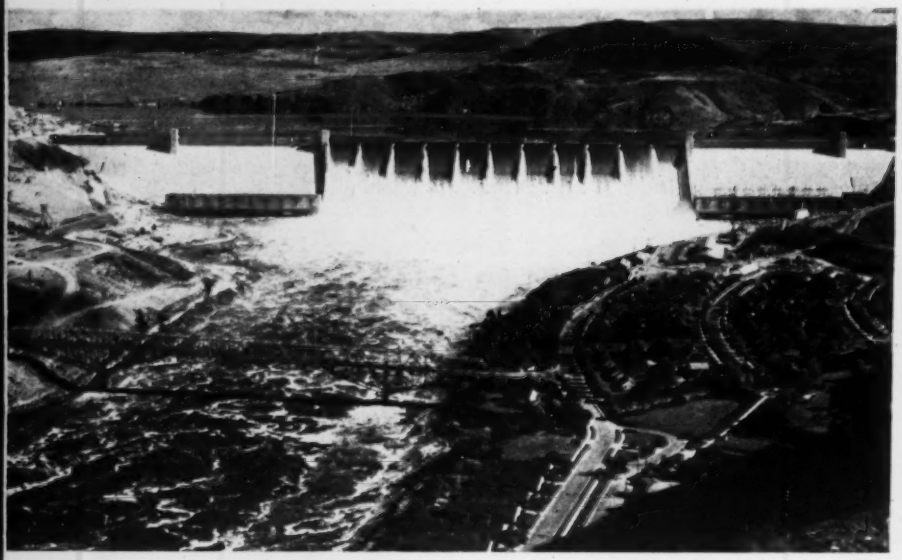


What Khrushchev Should See



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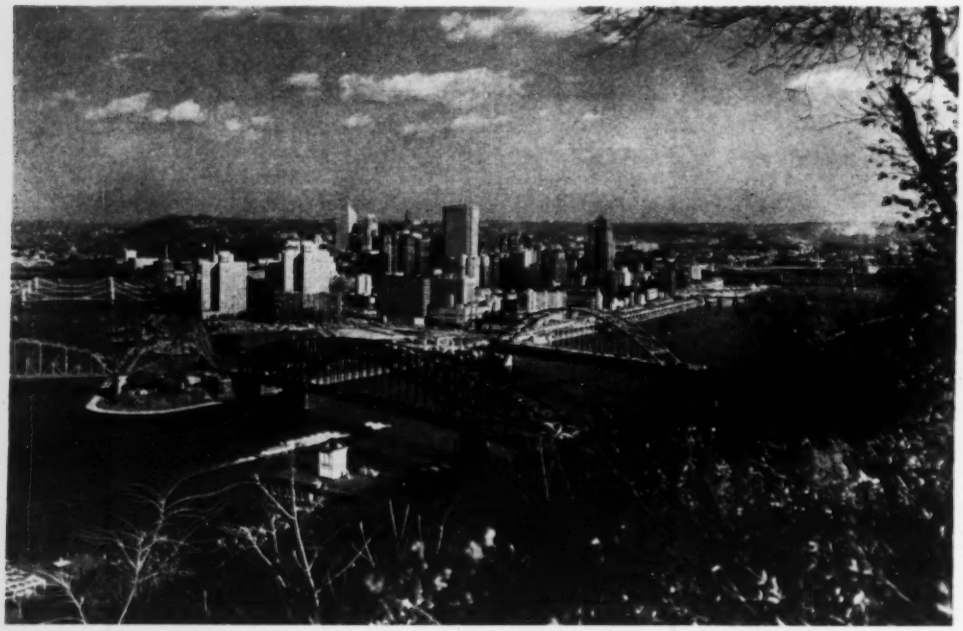


The ever-changing face of our cities . . .

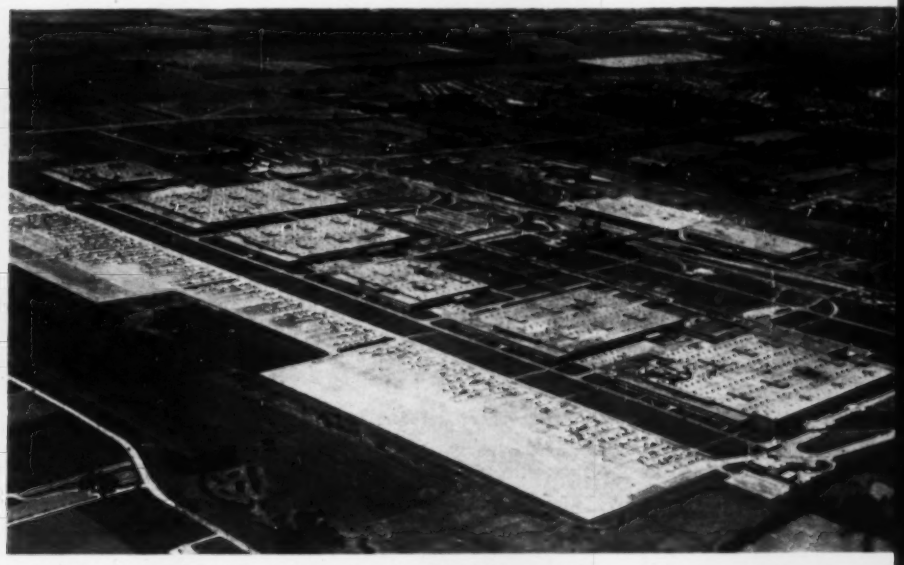
. . . as they build and rebuild for the future. Pittsburgh's Golden Triangle is a glittering example, but many other metropolises are at work—growing without, modernizing within.

in Construction

Soviet Premier Nikita S. Khrushchev's whirlwind tour of the U. S. this month isn't likely to give him a very full understanding of all the indefinables that make this country tick. Yet there is much for Mr. Khrushchev to learn within his own materialist frame of reference, starting with the premise, "America is what America builds." Here is a representative group of construction projects that could tell him much about our way of life.

in the world . . .

from Lake Michigan for Windy City residents and industries.



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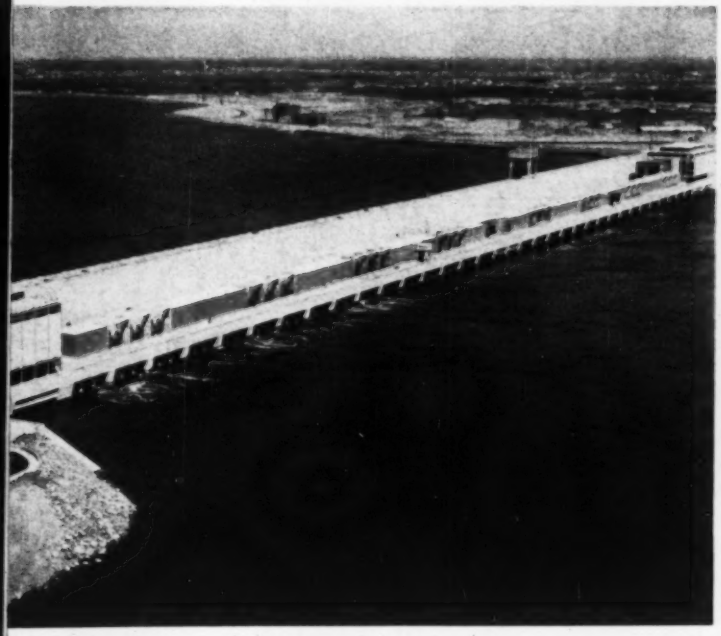
. . . like the washing machines and air-conditioners that roll off the assembly line at General Electric's Appliance Park in Louisville.



The fruits of international cooperation . . .

. . . as symbolized by the St. Lawrence Seaway, a joint effort of the U. S. and Canada, whose friendship knows no boundaries.

How we fight slums . . .

. . . with urban housing projects like those now covering New York's Lower East Side.

Turn the page

(Story starts on p. 34)

How we get where we want to go . . .

. . . on fast, complex superhighways that will soon be linked nationwide in the Interstate Highway System.

Where we shop . . .

. . . in the new suburban business centers, geared to the auto and dedicated to plenty.

The kind of homes within our reach . . .

. . . like this Levittown, Long Island, unit, which is within the financial reach of most American workmen—including construction workers.

Our love of fun . . .

. . . that finds room to invest money and effort in projects like Disneyland, dedicated to the delight of children of all ages.

The men who build America

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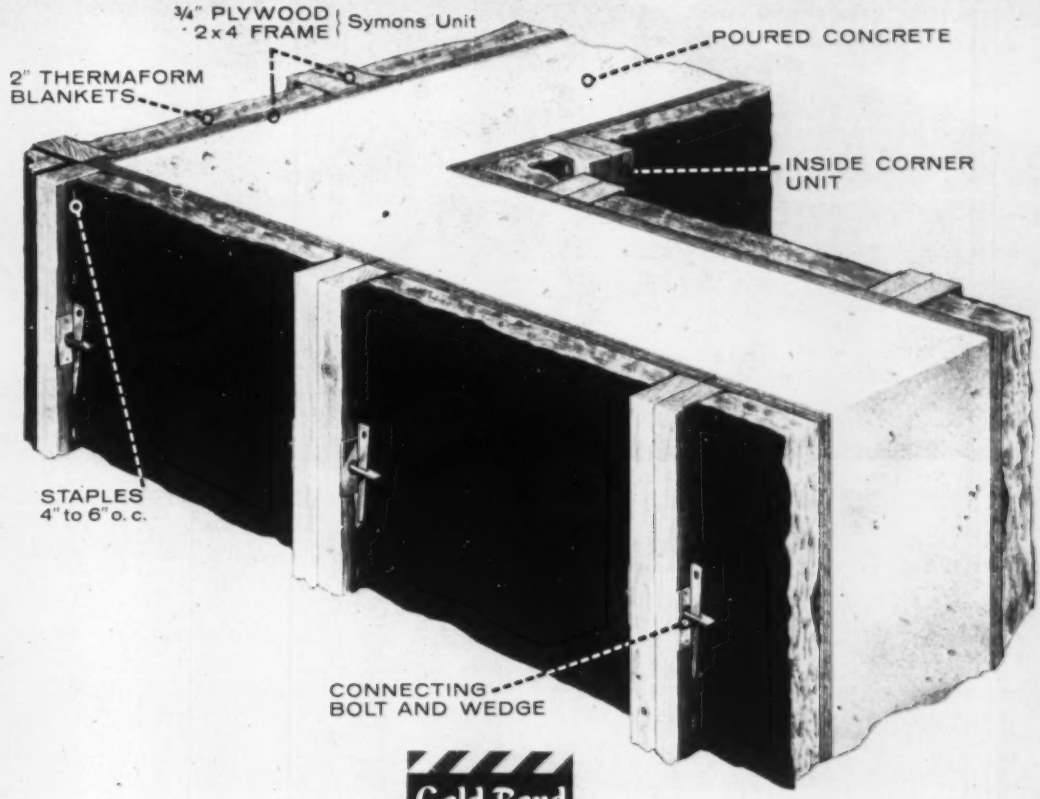

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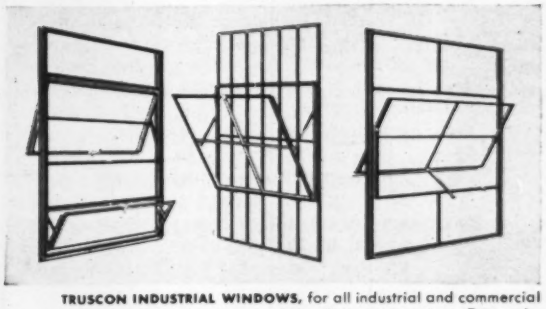

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Some skeptics thought this huge project would never be built . . .

Portland Gets Nation's Largest

Lloyd Center will have parking on and under slanted roofs.

One of the largest shopping centers in the world is now under construction in Portland, Ore. It will cover 56 city blocks almost at the exact population center of the city—a six-minute drive from the established business center on the other side of the Willamette River.

Already opened in the Lloyd Center is the largest supermarket Safeway Stores, Inc., has built on the Pacific Coast. The rest of some $30 million of construction is moving fast toward scheduled completion next May.

For a long time, as the late Ralph B. Lloyd patiently acquired one block after another, levelled the houses and let the ground go to grass, Portlanders looked at the project as the odd and visionary foible of a California oil millionaire.

Some Portlanders were still skeptical of Lloyd Center even after three contractors started last year on $21.5 million worth of basic contracts. Now a $6-million, 300-room Sheraton Hotel is nearing scheduled completion this fall as an adjunct to Lloyd Center.

The skeptics now not only believe it will be built, but some, whose businesses

When finished next May, it will cover 56 city blocks

Shopping Center

are tied to the established and dowdy downtown business district on the west side of the Williamette, are worried.

For they can see, as construction takes form, that John Graham Co., Seattle architects-engineers, who have some 30 shopping centers behind them, weren't fooling in saying they had planned a center where shopping would be a pleasure.

Concerned about downtown Portland's congestion, limited parking and general inconvenience, the downtown merchants and property owners have formed Downtown Portland, Inc., and hired Portland's former planning director, Lloyd Keefe, to help them. Some of them, including Oregon's largest department store, Meier & Frank Co., are on the Lloyd Center bandwagon and will do business on both sides of the river.

Lloyd Center will have 1,200,000 sq ft of rentable space. According to the owner's figures on rentable space of other large shopping centers, this makes it the nation's biggest. The nearest to it is the rentable 1 million sq ft of Detroit's Northland.

• **Parking**—Of the 3,600,000 sq ft to be developed, two-thirds is devoted to parking. In the center and contiguous areas, there will be spaces for 10,000 automobiles, more than twice the number of metered parking spaces in Portland's central business district. Of these, 3,500 will be covered, a very desirable feature in Oregon's showery climate.

Parking will be on two and three levels, each of which, because of differences in elevation between sides of the project, open onto a street. Tilted-deck construction provides two-level parking for the project's two supermarkets and for one other area. The shopper-motorist can enter any of the main covered parking levels and proceed to a destination on another, hardly aware, because of slight gradients, that he has ascended or descended.

• **Pedestrian mobility**—The designers have excluded vehicular traffic completely from the shopping malls. His car parked, the shopper may enter any of the "anchor" structures at the same level. Movement from undercover to mall level is eased by moving stairs.

Major buildings are connected by three 50-ft-wide partly covered pedestrian malls, forming a T. Six two-level multitenant buildings line the malls. Covered walks, arcades and balconies protect shoppers from the weather.

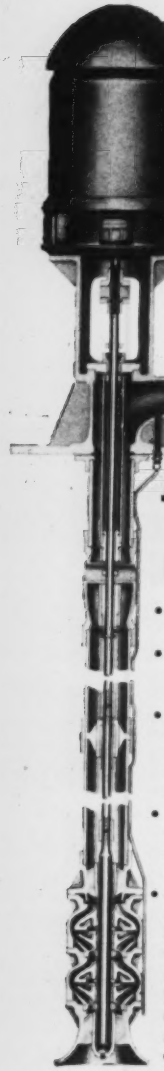
The project has been planned to generate traffic by providing "pulls" between major stores.

• **Shopping pleasure**—The Lloyd Corp. has retained control over design and use of signs to insure a "gay and variegated but not gaudy" atmosphere. The aim is leisurely shopping.

The shopper will be soothed with soft music and will be able to rest at frequent benches. There will be plantings and greenery, changed from time to time. Some of the greenery masks ventilators for the lower parking levels.

Where three malls join in a central plaza, there is a covered outdoor ice skating rink. Its 76x180-ft dimensions make it half again as large as the rink in Rockefeller Center in New York. Bridging it at one end and looking out on it will be a restaurant.

At the other end of the rink there will be a lounge and skate rental headquarters. Atop the structure at this end will be garden walks and a sculptured pool. An "ascending garden" through which rise short flights of steps, inter-



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. . . Shopping center has hotel, office buildings

spersed with level spaces, will provide gradual and easy ascent and descent between the mall level and the rink level.

• **Service facilities**—No trucks or delivery vehicles will interfere with shoppers. They won't even see one. Truck deliveries and pickups for the major buildings are by underground passages separate from the parking areas.

The multitenant buildings rise from the mall level and have no basements. Storage facilities are on the second floor. They are served by the four branches of an overhead truck concourse reached by a ramp from a perimeter street. The concourse, sunk in the buildings and open at the top, is built to handle trucks up to 30 ft long and weighing 10 tons loaded. Electrically operated, silent turntables with pushbutton controls solve the turning problem at the dead ends of the concourse branches.

Key building and focal point of the center at the juncture of the T is the five-level, 300,000-sq-ft Meier & Frank Co. building. It is of standard concrete joist construction, and, as the central structure, is the only building to be faced on plaza and street sides with cast stone. The other major buildings are faced with brick, standard throughout the project. Multitenant buildings are faced above mall level with panels of porcelain-enameled metal.

The central heating plant—an oil-fired low-pressure steam system with five boilers—and the incinerator are located in the basement of the Meier & Frank building.

That building will also incorporate elevators and moving stairs. It will be air-conditioned throughout, as will all the other major structures. Each leased space in the project larger than 2,000 sq ft is basically provided a complete heating and ventilating system. Air conditioning is optional with the tenant at extra cost.

An air curtain will be installed at the plaza entrance of the M & F store.

Unlike many shopping centers built outside city limits, Lloyd Center construction has had to conform with city building and fire codes. All the lowest level of parking and all basements are sprinklered. The Meier & Frank, J. C. Penney and Safeway store buildings are sprinklered throughout. Large areas of the other major stores are also sprinkler protected.

Opening of the project as a whole is scheduled for next May, but by special arrangement, the Safeway store went into operation early this year. It and another supermarket, to be operated by a yet unnamed tenant, form the base of the T, separated from the mall structures by one of two streets that pass through the center. The two supermarkets face on NE Broadway, a main business street feeding a high-income district.

The 31,620-acre-ft store is 180 x 115 ft and has a full basement. A double-tier parking area of tilt-deck construction adjoins the store, providing parking for 300 vehicles. Two moving stairs connect the lower parking deck to the sales-floor lobby.

Other major stores include: J. C. Penney Co.'s three-level structure of 99,370 ft; a three-level building of 93,114 sq ft to be occupied by J. J. Newberry Co.; F. W. Woolworth Co.'s 62,734 sq ft three-level structure; a four-level building for Best's Apparel, Inc., of Seattle, with 48,824 sq ft.

Nearly completed and scheduled for opening in September, the nine-story, 50x130-ft Sheraton Hotel is being constructed on a four-block site. It's facade consists of alternating panels of aluminum, porcelain and glass. Two two-story wings, each with 17 rooms, extend from the front and flank a free-form swimming pool. A restaurant, a ballroom that can seat 1,150 for banquets and 1,650 for meetings, and kitchen facilities are in an 88x179-ft low-level extension at the back.

The Lloyd Center has still another type of building not usual with shopping centers. It's the Interior Building (ENR Oct. 15, 1953, p. 30) built by the Lloyd Corp. in 1953 for the Department of Interior on a lease basis. The federal government is now negotiating to buy it outright from Lloyd for $5.5 million. It is home base for some 1,200 federal employees.

Construction by Lloyd Corp. of the Interior Building was the first sign to Portlanders that something was going to happen on the property. Mr. Lloyd died at the age of 78 in 1953, and Portlanders pessimistically thought that was the end of Lloyd Center.

But his four daughters, principals of the Lloyd Corp., decided the project should go ahead, partly as a memorial to their father's vision.

John Graham & Co. began working on plans and specifications in 1953. The project went to bid last year, split in four contracts. Donald M. Drake Co., Portland, won the two largest contracts, one for $7,746,252, the other for $7,643,311. Max J. Kuney Co. won the third, totalling $5,357,180. A fourth contract for construction of the Safeway supermarket went to Henry M. Mason Co., Portland, for $682,652.

Hoffman Construction Co., Portland, is builder of the Sheraton Hotel. Exact figure of the contract award was not announced by the Sheraton Corp., but the city building permit was for $5 million.

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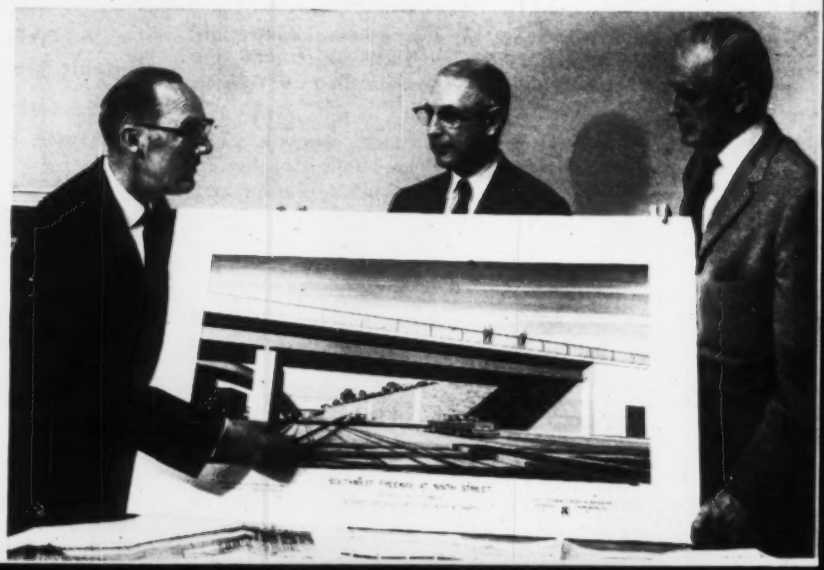
Steel bridge carrying US Route 22 over Bushkill Creek in the vicinity of Easton, Penna.



John R. Dietz, Vice President, Earl D. Schwartz, Chief of Bridge Section, and W. H. Corddry, President, discussing an artist's rendering of a steel bridge over the Southwest Freeway in the District of Columbia.

Steel enjoys wide use in short-span bridge design

at Gannett, Fleming, Corddry & Carpenter, Inc., Consulting Engineers, Harrisburg, Penna.

This firm has designed short-span steel bridges for many important highways. These include the Pennsylvania, New Jersey and West Virginia Turnpikes; the Connecticut Expressway; Garden State Parkway; Penn-Lincoln Parkway, Pittsburgh; Schuylkill Expressway, Philadelphia; and Southwest Freeway, Washington, D. C.

Normally, 70% of their short-span bridges are designed in steel. There are many good reasons for this, according to Mr. John R. Dietz, Vice President in charge of the highway and bridge division of the firm.

Steel is a familiar material. There is a tremendous library of knowledge accumulated on steel and there are no unknown factors. This is important because the designer is looking for reliable performance.

Steel goes up in a hurry. Short spans must be constructed with least interference with traffic. The rapidity with which steel can be erected is a big advantage.

Steel permits maximum headroom. Also minimum approach alteration, less dislocation of existing buildings and roads and lower costs.

Steel reduces costs. Lighter construction with steel reduces foundation costs and faster erection saves labor. New high-strength steels offer greater strength with less bulk.

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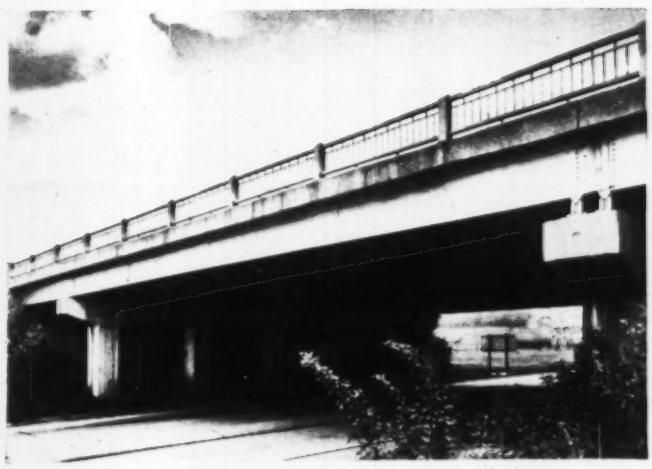
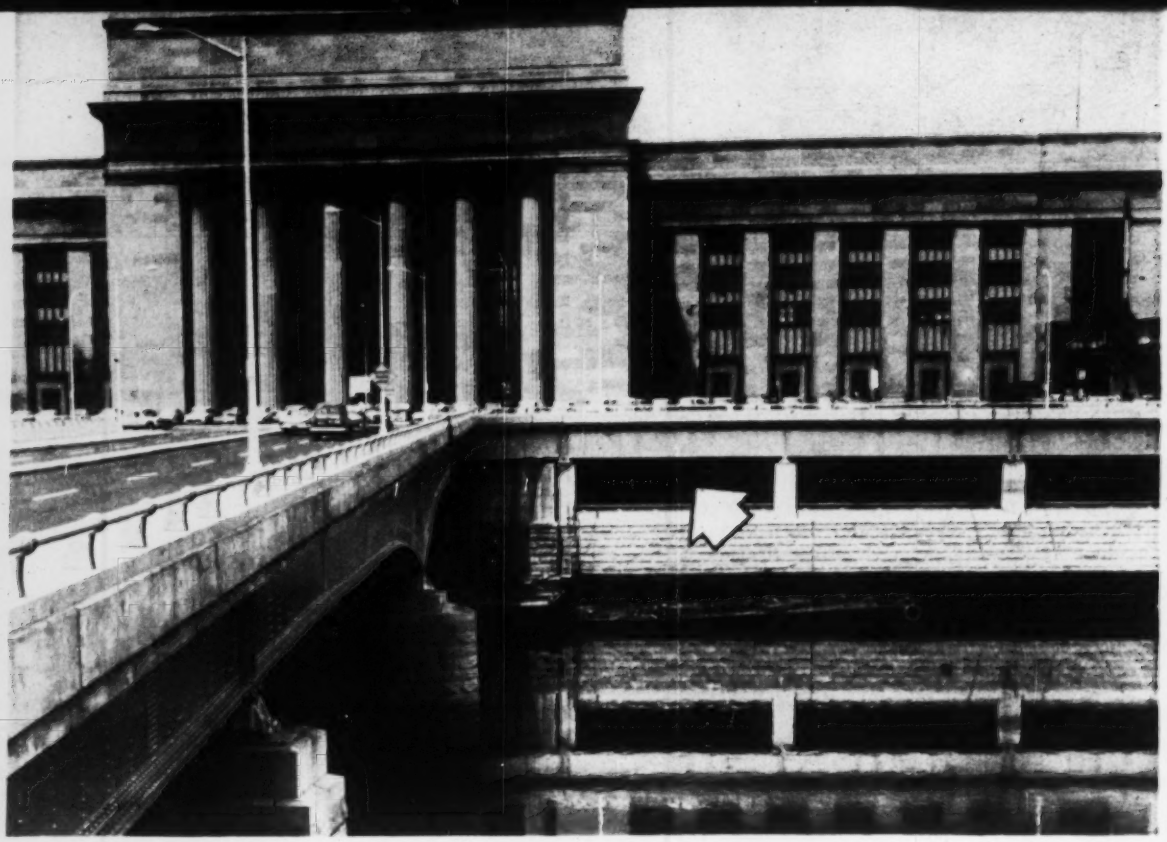


Steel bridge carrying Route 22 over Route 309 near Allentown, Penna. Steel is versatile and available. It can be readily welded, flame-cut, riveted, bolted.

Mr. Dietz (left) and Mr. Schwartz discussing a model of a welded steel girder on an elevated pier.



Getting an expressway (arrow) past Philadelphia's 30th Street Station proved . . .

Tight Squeeze for a Road: Here's

The problem at Philadelphia's 30th Street Station was twofold:

- Run an Interstate highway between the station and the immediately bordering Schuylkill River.
- Ease the traffic congestion generated by the busy railroad terminal.

Solution to the first: Put the expressway along the lower level of the east side of the station, with ramps to the upper plaza overhead.

Solution to the second: Extend the plaza to the riverline; lay out a double rotary system around the station; and run a new four-lane boulevard across the river, straight into the heart of town.

Both jobs were worked out by Gannett, Fleming Corddry & Carpenter, Inc., Harrisburg, Pa. The consulting engineering firm designed a two-mile length of the Schuylkill Expressway and all of the station plaza and Pennsylvania Boulevard.

This piece of expressway is the last in a $90-million, 17-mile-long link with the Walt Whitman Bridge over the Delaware River to the south and the Pennsylvania Turnpike to the north. It includes a crossing of the Schuylkill River, and will be finished this fall.

The section of the expressway under construction starts a few feet north of the station, follows the west bank of the Schuylkill and crosses the river about ¼ mile south of the station. From there it ties in with approaches to the Walt Whitman Bridge.

• Roadway on structure—The highway is made up of two 26-ft-wide roadways, separated by 4-ft-wide raised dividers that can be passed over in emergencies.

The job was complicated by a tight squeeze past the station, and by a 25-ft-deep layer of muck and uncompressed silt along the line of the road. The soils engineer's report anticipated 1 in. of settlement in five years for every additional foot of fill placed on the area—and fill depth varied from 1 to 15 ft. Because such settlement could not be tolerated for a heavily travelled expressway, fill was excluded from any design consideration.

Instead, the roadway is supported on structure down to rock. Steel piles consisting of 12 in. BP 53 H-beams, averaging 55 ft in length, were driven through the muck and silt down to underlying mica schist. They come to bear after penetrating a few feet into the decomposed surface of the rock.

The piles form a series of bents on 20-ft centers, with piles spaced about 7 ft along the bent. With eight or more piles across the width of the highway, the expressway took on the appearance of a waterfront pier job.

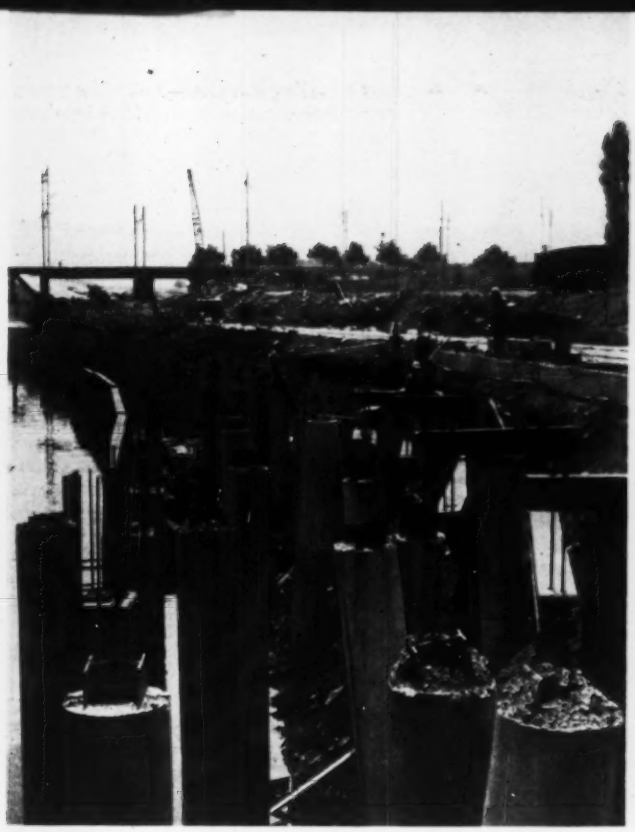
The exposed length of steel piles was protected with a concrete casing, cast in place and extending to 2 ft below the ground line. The 18-in.-dia cylinders formed by the casing are topped with a reinforced concrete cap.

In casting the 15-in.-thick reinforced concrete roadway deck, the previously useless ground was put to work. After it had been leveled and smoothed, it served well as the bottom form for the slab.

• Holding up the plaza—While the roadway looked like wharf work, passing the expressway along the side of the station and under the plaza took on the aspect of structural framing for a heavy building.

The upper plaza was extended to the riverline, adding 40 to 60 ft in width for a distance of 1,200 ft. This provided space for the roadway underneath, for the traffic flow plan around the station and for the distribution of expressway traffic to and from central Philadelphia via Market, Chestnut, and Walnut streets.

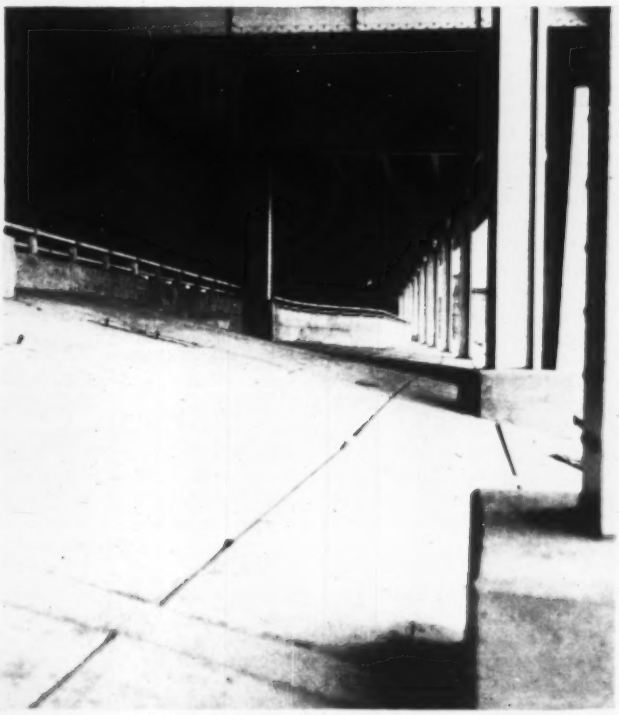
(*Turn the page*)



1. Piles make roadway resemble wharf job.

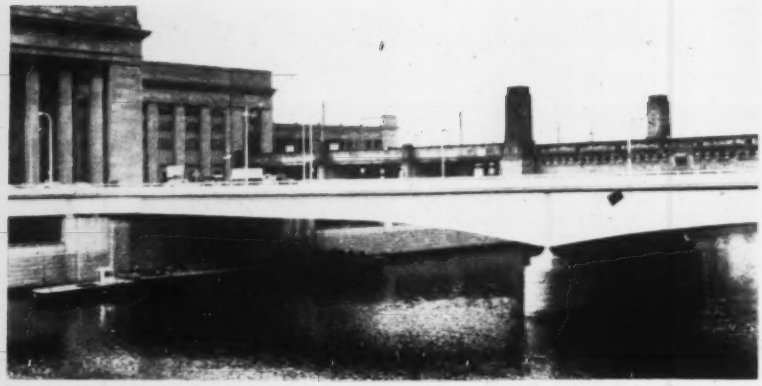
2. Expressway roof is plaza floor.

How They Did the Job



3. Precast panels span space to bulkheads.

4. Corner girder is curved.



Bridge girder has deep center, slender end for clean look.

Old bulkhead piles disintegrated quickly when removed.

Steel columns along the railroad side of the expressway and concrete piers along the bulkhead line are used to get a 66- to 100-ft span across the expressway.

The original row of columns holding up the plaza was moved back 8 to 12 ft to secure the desired horizontal clearance and still leave a 12-ft-wide service road between highway and station. Temporary supports held up the plaza structure while the contractor removed the existing columns, cut the deck and made connections to new supporting girders and columns. The 129 columns lining the "underpass" are built-up structural shapes spaced at 24 to 49 ft in order to clear the many utilities.

The riverside supports for the plaza are reinforced concrete piers faced with dressed stone to match the architecture of the station. Each pier sits on a cluster of H-piles driven to rock. The tapered piers are 25 ft high, measure 5 ft 1 in. x 5 ft 6 in. at the base and 3 ft 8 in. x 4 ft 8 in. at the top. They are spaced along the bulkhead line on 49-ft centers.

Massive fascia girders span between the piers and pick up the load of the floor beams.

To improve appearance, the fascia girder is curved on a 15-ft radius through a 90-deg angle at the northeast corner of the plaza.

The expressway between Arch and Walnut streets is spanned by 120 steel-plate girders, 4 ft 9¼ in. deep. Clearance from the underside of the girders to the roadway surface is 14 ft 3 in.

Another ticklish part of the expressway job was extending it under six existing bridges, which had to be altered while maintaining traffic on them.

The Market Street Bridge, at the southeast corner of the plaza, was a special problem. It sits over a subway tube built 25 years ago and opened to use two years ago. The bridge superstructure over the expressway between abutment and plaza had to be supported to eliminate some existing columns.

Two concrete piers were sunk between the expressway level and bedrock—a difficult operation because of the narrow working space between subway tube and facilities that had to be kept in service. A steel truss spanned these two piers and cantilevered beyond to pick up the load of the bridge.

• **Dividing the plaza**—Above the expressway, the station was divided into roadways by islands and dividers to get a safe pedestrian movement and an orderly traffic flow around, and to and from the station.

Two rotaries are the backbone of the system. An inner one moves traffic around the station in a clockwise direction and an outer one in a counterclockwise movement. Traffic moves quickly to local streets on the west side of the Schuylkill River and to and from the expressway.

• **Straight to City Hall**—Tied in with this system is a new Pennsylvania Boulevard, which crosses the river and runs straight and wide for a distance of three-quarters of a mile, ending at Broad Street near city hall.

Before this was put into operation, jam-packed Market Street and its bridge had to bear the brunt of the heavy rush-hour traffic generated by Pennsylvania Station.

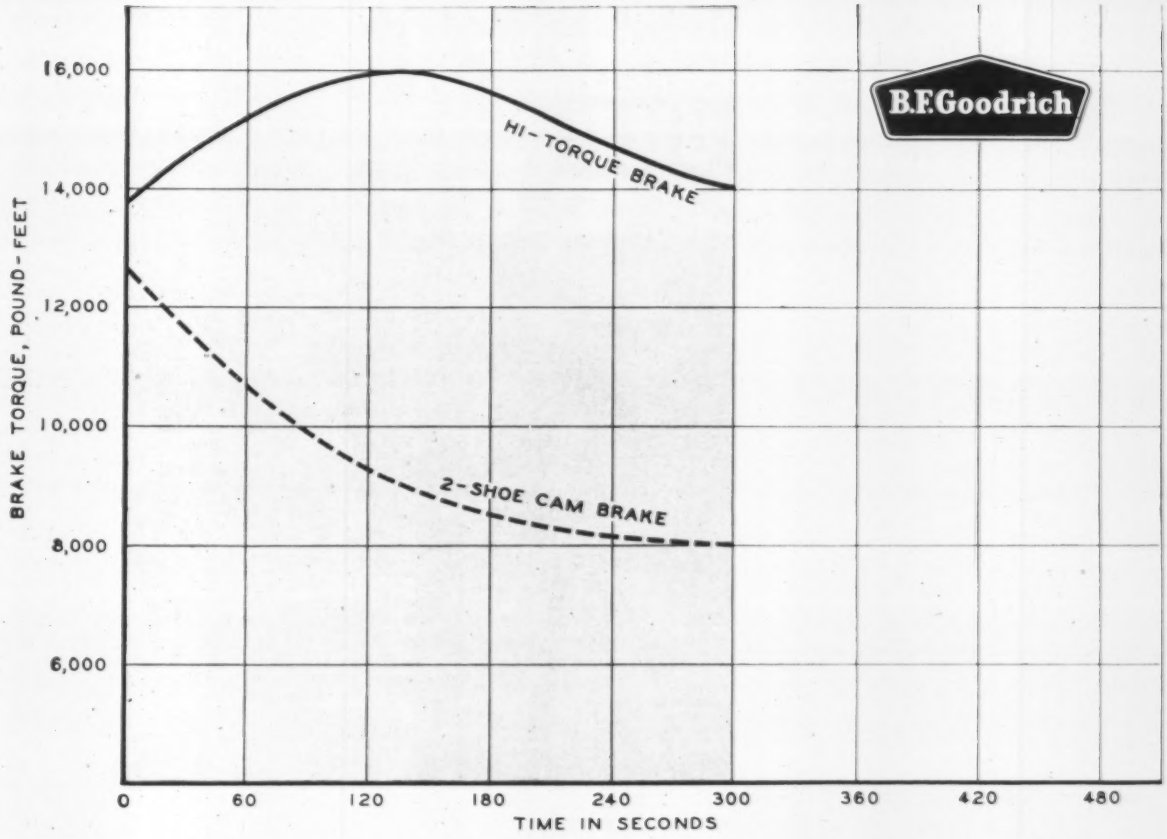
The four-lane boulevard starts at right angles to the edge of the widened east plaza and crosses the Schuylkill River on a 371-ft-long, two-span, continuous deck plate girder bridge. The boulevard then runs for three blocks on an elevated structure. This structure sits on fill placed between old railroad masonry walls on one side and new retaining walls on the other. The three cross streets are bridged with prestressed concrete box beam structures. Another block on sloping fill brings the boulevard down to grade.

Another instance of attention to architectural appearance is in the boulevard bridge. The two-span continuous girders are especially deep and stiff at the center piers in order to keep the end portion slender to match the fascia girders along the station plaza. The absence of verticle stiffeners on the outside of these girders gives the structure smooth clean lines.

• **It isn't what it seems**—Outward appearance also influenced the construction of a bulkhead wall along the expressway in this area.

When seen from across the river, the bulkhead in the station area appears to be a solid stone wall. It is actually much less expensive composite construction. Stone facing is backed up with a thin concrete section that sits on a small concrete footing set on H-piles. The wall is tied into the expressway piers and cross bents to provide stability. The area between the wall and the expressway is covered with precast concrete panels to form a clean roof. The expressway bents and piers south of this have been left exposed, with provisions for construction stone-faced wall when desired.

(*Continued p. 50*)



B. F. Goodrich Hi-Torque Brakes do twice the work of 2-shoe cam brakes

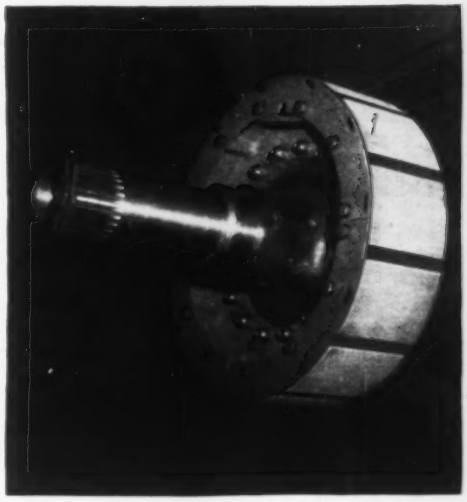
Here's a test that *proves* the superiority—the reserve stopping power—of B.F.Goodrich Hi-Torque Brakes.

During this test, a constant speed of 53 rpm was maintained on a giant dynamometer. Under constant pressure conditions, brakes were applied—on for 15 seconds, off for 15 seconds, on for 15 seconds. This repeated pattern duplicated operating conditions of heavy equipment on a long down grade.

As you can see from the graph, the torque of the B.F.Goodrich Hi-Torque Brake actually *increased* for a time—and never fell below the original 14,000 pound-feet. On the other hand, the conventional 2-shoe cam brake of the same size lost brake-torque immediately. In addition, drum temperature with the Hi-Torque Brake was 50-75° lower at every stage in the test.

The unique full circle stopping power of B.F.Goodrich Hi-Torque Brakes means faster, safer stops—with much less chance of fade. And these modern heavy-duty brakes can be either air actuated or direct-hydraulic actuated, an added feature for your convenience.

Get the full story on B.F.Goodrich Hi-Torque Brakes. Write *B.F.Goodrich Aviation Products, a division of The B.F.Goodrich Company, Department EN-99, Troy, Ohio.*



B.F.Goodrich *Hi-Torque brakes*

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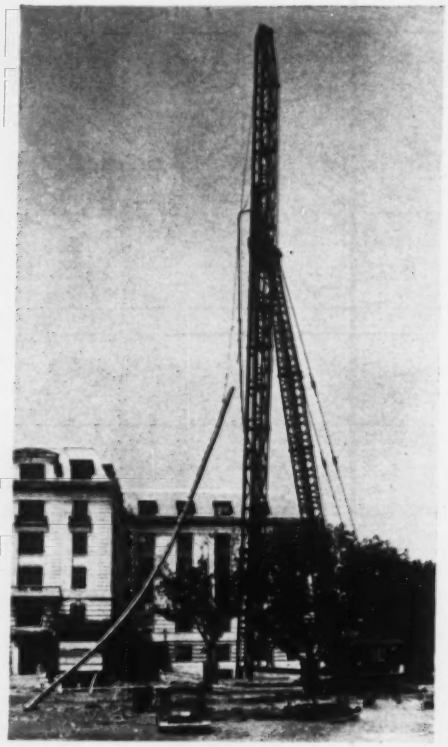

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. . . Tight squeeze

• **River crossing**—Further south is the Schuylkill Expressway river crossing. The fixed span bridge shows up as a decided contrast to a swing span structure just upstream and a bascule downstream. Minimum clearance is 50 ft above water.

The three river spans of the bridge are half-through continuous plate girders, to secure the minimum floor depth for clearance requirements.

The bridge crosses the 450-ft-wide river at a 45-deg skew. Single column type piers faced with stone give minimum obstruction in the river. Channel piers go down to rock; piers on the bank are set on H-pile foundations down to rock. The bridge crosses the tracks of the B&O Railroad and adjacent industrial area, making a total length of 1,700 ft.

• **Times gone by**—A bit of history was unfolded when test pits were made to investigate the condition of the original bulkhead wall along the river bank.

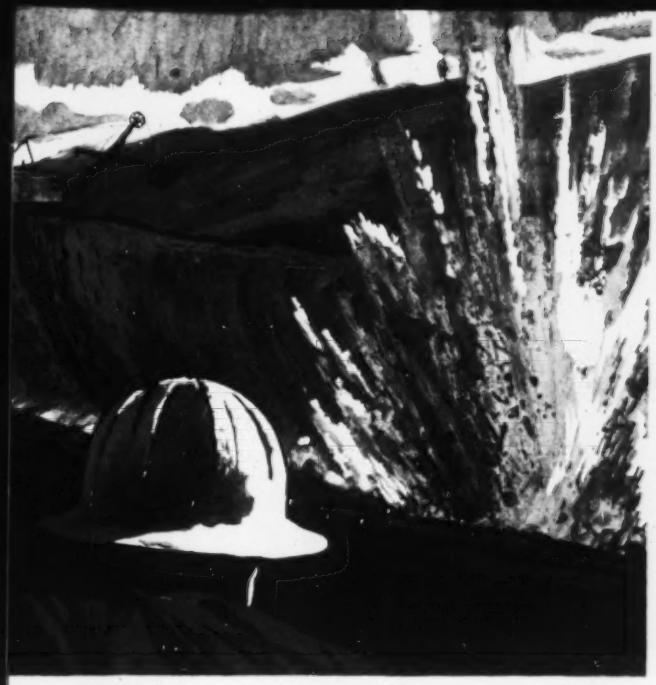
Workmen unearthed a platform-type bulkhead that had been built before the turn of the century, when the Schuylkill River was a busy shipping artery. Copies of newspapers dated 1896 were uncovered advertising skid-proof horseshoes. There was also evidence of a cobble-stone street and trolley tracks on what is now nothing but river bank.

The bulkhead had been built by driving wood piles from about the waterline and laying a wood platform on them to support fill. Originally, a timber bulkhead wall was attached to this platform, but apparently at a later date a concrete and masonry wall was built without much anchorage to the platform.

The structure was in surprisingly good condition and had obviously done its job throughout the years. However, when the platform planks or wood piles were removed they quickly disintegrated—sometimes in a matter of only hours.

J. R. Dietz was managing partner for Gannett, Fleming, Corddry & Carpenter, Inc., on the expressway job; C. W. Zwally was project engineer in charge of location and highway design, and E. D. Schwartz was in charge of structural design. S. C. Weikert, district engineer, was in charge of construction for the Pennsylvania Department of Highways. Construction was broken down into five sections. Contractors were Buckley & Co., Inc.; McCloskey & Co.; Conduit & Foundation Corp.; Kauffman Construction Co.; and F. A. Canuso & Sons. All are Philadelphia firms.

Design and construction were closely coordinated with Philadelphia's Department of Streets under Commissioner David M. Smallwood.



Dynamite under control. To protect buildings from blast damage, Liberty developed an instrument that tells how much dynamite can be used safely in a particular locale. The "accelerograph" has helped contractors cut insurance costs on such jobs as the New York Thruway and the Connecticut Turnpike.

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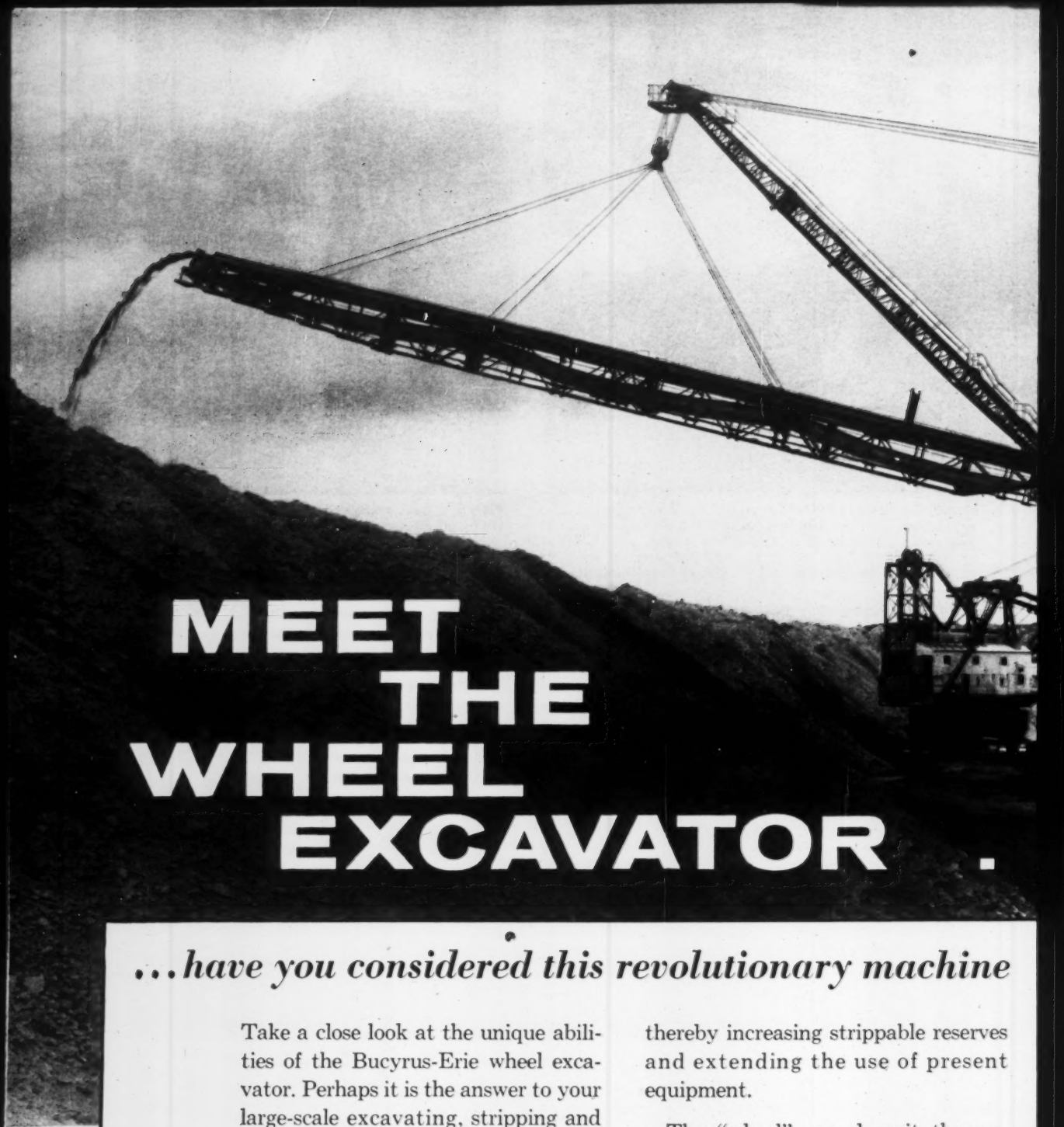

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The "wheel" can deposit the unstable material, normally occurring near the top of a mine cut bank, far back onto the spoil pile. The stripping shovel places the more stable material from the lower part of the bank at the bottom of the spoil pile where it acts

for your operations?

as a "buck wall," providing protection against slides in the pit.

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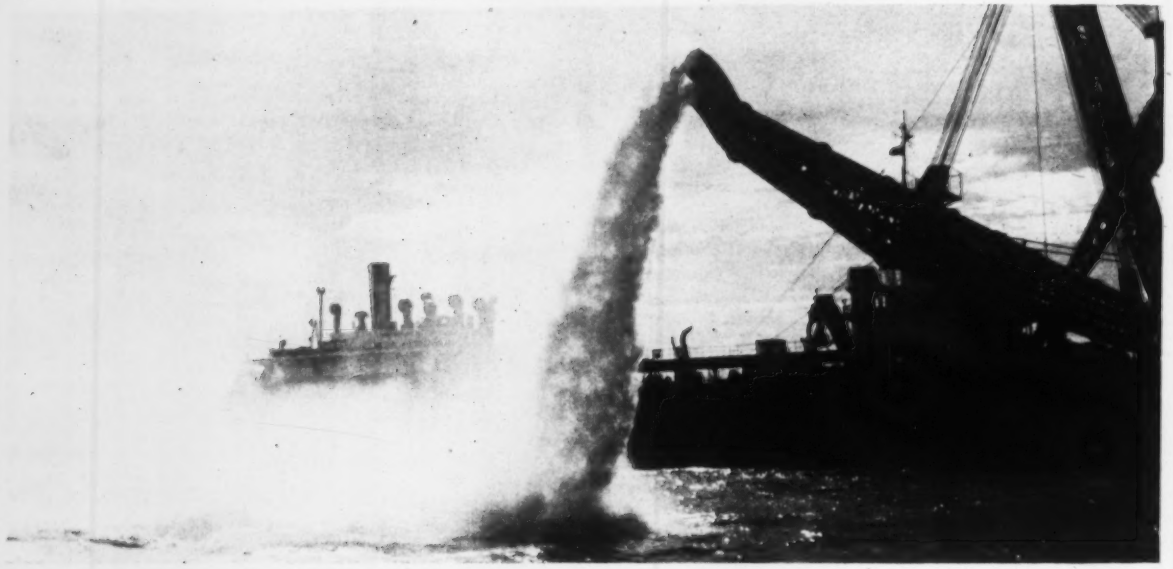

Jets Material Out of the Way . . .

A boom-type suction dredge—first and only of its kind and especially designed for the job—has opened up a 139-mile channel through the Boca Grande arm of the Orinoco River in Venezuela.

The new 400-ft-wide channel with a minimum low water depth of 30 ft. replaces an existing 109-mile waterway through the Cano Macareo, a shorter but more sinuous arm of the Orinoco.

Until the new dredge was developed there was no economical way of cutting a 26-mile channel through the bar at the mouth of the Boca Grande.

The bar is made of very fine material with a natural slope of 1:100. A minimum depth of 17 ft has always been available over the bar.

Dredging with a hopper vessel was considered too costly, while dredging with pipeline was impossible because of wave motion. A channel could conceivably have been opened, but its maintenance cost would have been excessive unless protective jetties were built. And the cost of jetties would have been prohibitive.

The boom dredge finally made the project feasible because of its low operating cost—one-half (or less) the unit cost of pipeline dredging.

The dredge is a converted 16,000-ton, T-2 oil tanker. One section of the hull was removed to shorten overall length from 550 ft to 475 ft. Two 32-in centrifugal pumps were installed in the hold and drag irons with 36-in. suction pipe was suspended from a davit on each side of the ship.

Operation of the dredge is similar to that of a hopper dredge except that the pumps discharge through two 32-in. lines, which are suspended from a 240-ft. boom extending horizontally outward from the starboard side of the ship. The discharge lines are pinched and elevated slightly at their tips to jet the dredged material another 30 ft beyond the end of the line.

The base of the boom is seated in a universal joint mounted on a "blister" welded to the side of the ship. The discharge lines pass through the boom near its base, just above deck level. Discharge lines are coupled to the pump lines on deck by flexible inserts of rubber tubing about 7 ft long.

The boom and discharge lines are fixed at right angles to the center line of the ship during dredging operations. When the ship travels, they are swung 90 degrees and fastened to a stay on board the vessel.

Clearance of the discharge lines is 25 ft above water. During 26 months the dredge never had to halt work.

Normal draft of the dredge is 16 ft, but this can be reduced by lightening the fuel load. In parts of the Boca Grande bar the vessel pushed through soft bottom to operate in as little as 11 ft of water.

Chief disadvantage of the boom dredge is that it cannot open a straight channel in line with the current, since the current in this case would carry discharged material back into the cut.

For ease in navigation, a channel was laid out in the form of a slight curve

made up of four straight sections, each with its own set of range lights.

The vector current resulting from river and coastwise currents crosses the channel roughly at right angles. The current therefore helps carry dredged material out of the cut. Even so, the boom dredge may rehandle as much as 50% to 75% of the material. But its operating cost is so low that the technique is still economically feasible.

The bar in the section where it is crossed by the channel is made up of mud and fine particles of the size of clay. This composition is important for two reasons. Material of this size, when discharged by the dredge, remains in suspension long enough to be carried away from the channel by the current. Also, the mud and fine particles form a compact, stable channel slope with a steep angle of repose. The deep inner part of the channel has slopes with an incline of 1:6. Along its sides, the channel is beveled off to a slope of 1:30.

One of the factors in the earlier rejection of the Boca Grande waterway in favor of Cano Macareo was the belief that the entire bar was underlain with sand. This would have necessitated a much wider channel, with flat slopes, and rehandling of more material, since sand discharged by the dredge would have settled quickly.

The Boca Grande project commenced in late 1956. It was classified as experimental, because it was not known at the outset whether dredging of the bar was actually feasible. But the gamble was considered worthwhile because of the high cost of maintenance dredging in the Cano Macaero. The reduction in maintenance cost of the Boca Grande channel as compared with Cano Macaero is expected to equal the initial investment after about 18 months of operation.

Success of the boom dredge can be measured by its performance. The dredge was able to open a 30-ft channel in the time allotted for a 24-ft channel in original calculations.

Volume of material dredged was 50 million cu yd at a cost of $5.4-million. This unit cost of 11 cents per cu yd compares with an average unit cost of 21 cents per cu yd for two pipeline dredges used to keep the old channel open.

It is estimated that volume of maintenance dredging in Boca Grande will be 40% of that in the Cano Macareo. Since the unit cost is expected to be no more than one-half the cost of pipeline dredging, overall outlay for maintaining the Boca Grande channel will probably be around 20% of the maintenance cost of Cano Macareo.

From here on,

all you need is a wrench

Seattle, Washington, **engineered this 8585-ft. addition to its growing network of Dresser-Coupled steel water lines. All joints on the 40-ft. lengths of 48-inch pipe were Dresser-Coupled. The line was laid by Harbor Construction Company.**

The fast way is the Dresser way

No unforeseen delays, no unforeseen costs when you join water pipe the Dresser way. Non-rigid Dresser Couplings go on fast . . . without expensive equipment or specialized labor. All you need is a wrench . . . and with long lengths of steel pipe, you need fewer joints. Bottle-tight joints make it unnecessary to allow for leakage. Figure your next water line with Dresser Couplings . . . you can calculate your costs accurately . . . and *lower!*

It takes two man-minutes per bolt with a Dresser Coupling.

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Kit Gives Jeeps a Light Touch

There's a conversion kit available now that enables a jeep to ride softly and carry a big load.

The T-Kit converts jeeps of the CJ-3 and CJ-5 series for use with ultra-low-pressure tires. A fully loaded jeep equipped this way exerts only about half the ground pressure of a man on foot, and can operate at ground pressures as low as 4 psi.

The tires are flexible enough to go over protruding obstacles without developing damaging strains, the manufacturer reports. They can travel over cultivated soil without compacting it and over swampy or muddy terrain.

The wheels give a jeep a total width of 8 ft. The rig can be used on or off the highway. Terra Engineering Co., Inc., P.O. Box 254, Lexington 73, Mass.

V-6 Truck Engines Coming

Four times more durability than existing designs is claimed for a new group of GMC V-6 gasoline engines for trucks.

The 60-deg "V" design for the engines is also featured in a 12-cylinder powerplant in the series.

Better fuel economy, lower maintenance; easier access to components and high degree of parts interchangeability are claimed for the engines. They are said to have a potential of between 100,000 and 200,000 miles of continuous operation without major overhaul.

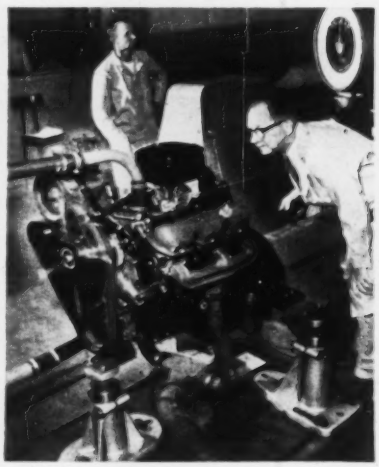
Maximum torque is developed at moderate engine speeds, the maker states.

The series is made up of a 401-cu-in. displacement V-6, a 305, and a 351, and a 702-cu-in. V-12.

Engines are of "over-square" design —bore dimension is greater than its stroke. Areas of high stress have oversized sections for minimum flexing.

From two to three times more coolant is said to be circulated through the new engines than in engines of previous design.

The engines are designed to run on regular grades of gasoline.



All six-cylinder engines have over 70 parts in common. Both six-cylinder and 12-cylinder units have over 50 parts in common.

Availability date for these engines in new GMC truck models has not yet been determined. Truck & Coach Div., General Motors Corp., Pontiac 11, Mich.

Central Heating

N. Y. crackdown spurs new, low-cost system

A crackdown on buildings lacking a central heating system by New York City and State has prompted introduction of a low-cost central heating system for marginal multiple dwellings.

The system is known as Vertical Finned Radiation. It can save 22% to 40% on the cost of installing a central heating system, says the maker.

The basis of the VFR system is a specially designed steel pipe 2 in. wide, which is installed vertically in the same manner as conventional radiator supply risers. The finned portion of the pipe extends 4 to 5 ft above each floor.

The same system that is used to install a radiator-type system—boiler and main and return piping—is employed in VFR. But the cost-saving feature of VFR is that no radiator is needed. The vertical finned pipe takes the place of the radiator.

The output of 13½ sq ft of EDR (Estimated Direct Radiation) per linear foot is reported to provide ample heat for the average room with a 9-ft ceiling. The system provides a temperature gradient with mean readings of 74 F at the ceiling and 68 F at floor level.

The conventional finned pipe, installed horizontally along with the baseboard, is unsuitable for VFR. Only a slanted fin placed vertically in a room can secure the convection action necessary for effective heating, claims the maker.

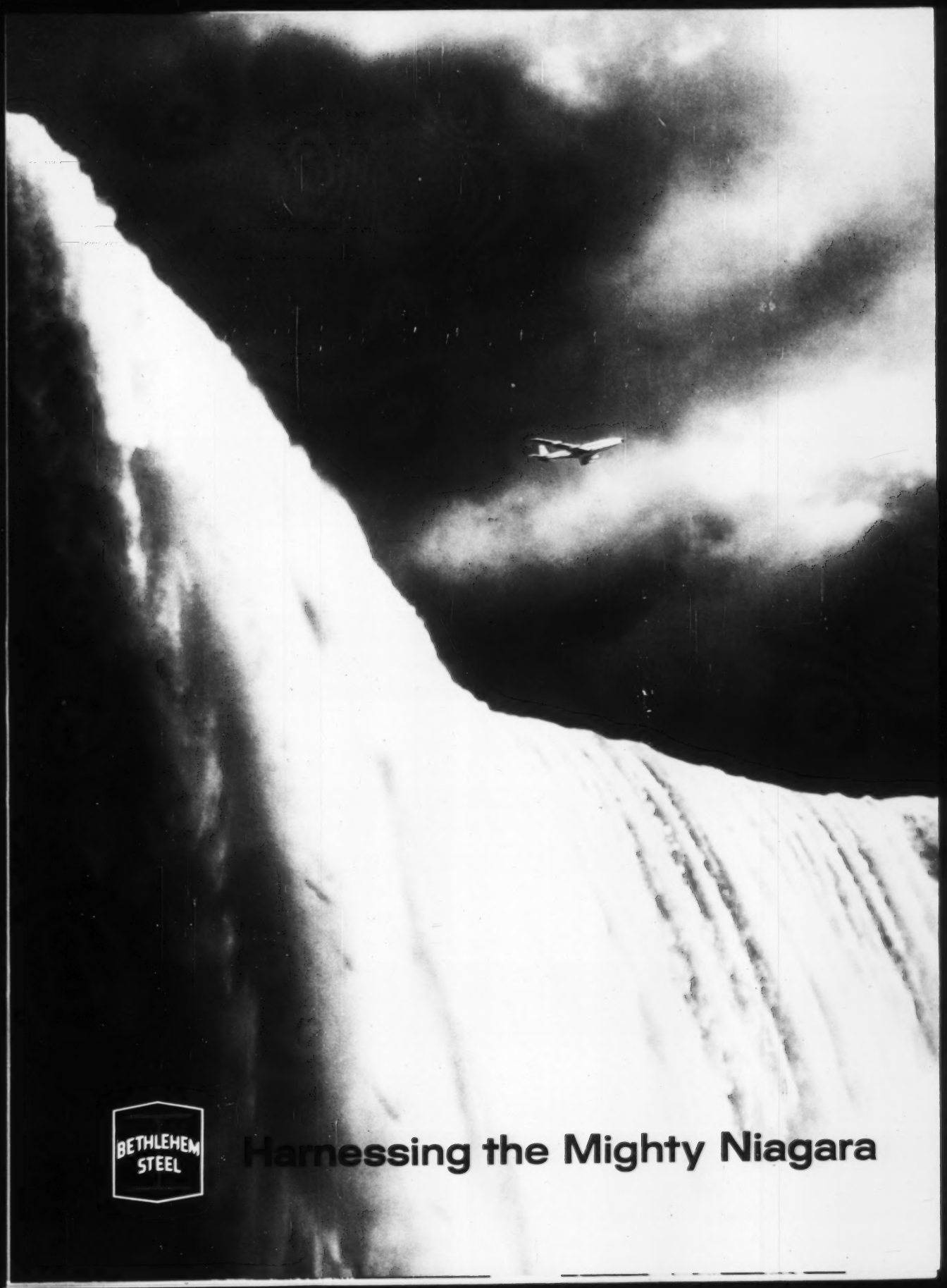
The heating system is said to conform with all New York City and State building codes, fire laws, health regulations and mortgage requirements. Slant/Fin Radiator Corp., Queens, N. Y.

18-Ton Crane Is Produced At Legal Highway Weight

A 6x4 tire-mounted crane offers an 18-ton capacity at a highway travel weight that is legal in most states.

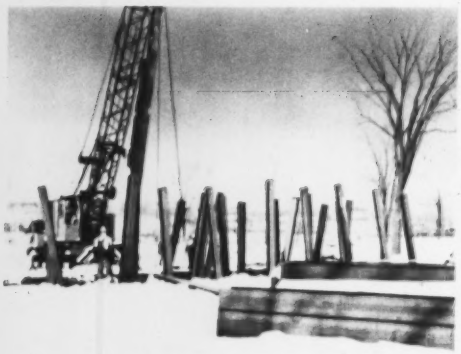
The crane, known as the MC-218, is mounted on a 180-in. carrier that has a 43 mph highway speed and rocker arm bogie construction. The turntable of the crane can be mounted on two positions on the carrier for maximum crane capacities or for the best digging ranges.

The carrier construction also includes side-by-side telescopic outrigger beams, straight-line propeller shafts and through-drive for automatic application of engine torque to the wheels having traction. Thew Shovel Co., Lorain, O.


BETHLEHEM
STEEL
Harnessing the Mighty Niagara

Twin conduits will shoot Niagara's water to 1,950,000-kw power house below Falls

BETHLEHEM STEEL



One of the world's most ambitious power projects—harnessing the maximum potential of the American share of the Niagara River—is now underway in the Niagara Falls area. Known as the Niagara Power Project, it is being built under the direction of the Power Authority of the State of New York.

These Bethlehem H-Piles, being driven to bedrock, will provide firm support for highway interchange near new American Rapids Bridge to Goat Island.

Plenty of muscle needed at this location. Bethlehem Wire Rope swings steel bridge section into position in vicinity of Tuscarora Pump-Generating Plant.

This steelwork is for temporary highway bridge near intake structures. Bethlehem also fabricated and erected six additional bridges for project.

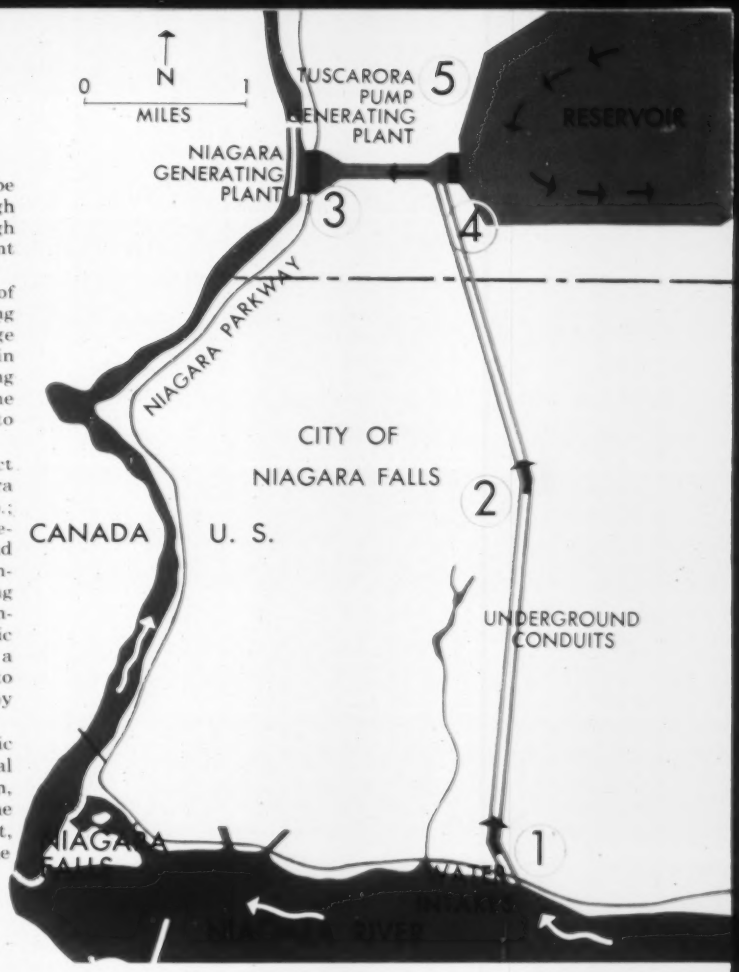
Features of the Project

At the intake structures above the Falls, water will be diverted from the river. It will flow four miles through two 46 ft x 66 ft underground conduits and then through a mile-long open canal to a 1,950,000-kw power plant located several miles below the Falls.

At night, during off-peak hours, some of the power of the main power plant will be used at the pump-generating plant to pump excess water up 80 ft into a storage reservoir. There it will be held in readiness for use in periods of high daytime demand when, besides producing another 240,000 kw at the pump-generating plant, the stored water will flow down the canal to the main plant to produce even more power.

The main features of the gigantic construction project are: intake structures (see circle 1 on map) and Niagara Generating Plant (3), Merritt-Chapman & Scott Corp.; water conduits (2) Balf-Savin-Winkelman and Gull-De-Felice; Tuscarora Reservoir (4), aggregate plant and canal, Channel Constructors (Peter Kiewit, Morrison-Knudsen, Perini, Walsh); Tuscarora Pump-Generating Plant (5), Tuscarora Contractors (Arundel, Hunkin-Conkey, L. E. Dixon). Related phases include a scenic highway, the elimination of railroad grade crossings, a new International Bridge to Canada, and a new bridge to Goat Island which is being fabricated and erected by Bethlehem.

What effect will this activity have on the scenic grandeur of Niagara Falls? None at all to the casual observer. In daylight hours during the tourist season, 100,000 cfs must flow over the Falls, as stipulated in the Treaty of 1950 between the U. S. and Canada. At night, and also during the daytime in the tourist off-season, the flow may be reduced to 50,000 cfs.



Wagon drills, equipped with Bethlehem Hollow Drill Steel, bore blast holes in rock during construction of 4-mile ditch to hold the reinforced-concrete twin conduits.

Bethlehem Beam Guard Rail, mounted on steel posts, offers protection to motorists at site of new power plant, overlooking Niagara River.

This Bethlehem Crane Rail is in service in temporary high-level trestle, hundreds of feet above the Niagara River at Lewiston. Trestle also contains Bethlehem structural shapes.

BETHLEHEM STEEL

LARGEST REINFORCING BAR ORDER IN BETHLEHEM'S HISTORY—Typical scene showing installation of Bethlehem Reinforcing Bars along route of 4-mile conduits. Some 60,000 tons of bars are being furnished for the project. Bethlehem also is furnishing the gate wheels, axles, and sheave wheels for the gates and gate-hoist mechanism.

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Wire Rope and Strand . . . for all construction uses . . . Stress-relieved Strand for prestressed concrete

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Steel Piling . . . wide range of sheet and H-piling, and accessories

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Bethlehem Slabform . . . formed sheets for poured concrete floors and roofs

Concrete Reinforcing Bars . . . All sizes, with excellent bending and bonding qualities . . . rolled from new-billet steel

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Galvanized Steel Sheets . . . for ductwork, roofing and siding, drainage pipe

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

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Corps Promotes, Retires Top Officers

Shifts in the Army Corps of Engineers' staff bring Brig. Gen. Clarence Renshaw to assistant chief of engineers for military construction and Col. Harry O. Fischer to division engineer of the North Central Division at Chicago.

Maj. Gen. Alvin G. Viney, who has been deputy chief of engineers for military operations since 1957, retires.

Brig. Gen. Renshaw comes to his new position from the North Atlantic Division, where he was division engineer. Among his Army construction projects are the Pentagon, the reconstruction of all ports and harbors in the Philippines and the Thule Air Base in Greenland.

He graduated from West Point in 1929 and holds a bachelor of science degree in building construction and a master of science degree in business and engineering administration, both from MIT.

Col. Clarence T. Renshaw

In his new position, Col. Fischer is responsible for a $175-million construction program in the 12-state area surrounding the Great Lakes. This construction, which is either proposed or under way, embraces five Corps of Engineers' districts—Chicago, St. Paul, Rock Island, Detroit and Buffalo, and the U. S. Lake Survey, Detroit.

Col. Fischer has also served as engineer for the U. S. Army, Alaska and as district engineer, Fort Worth, Texas.

He succeeds Maj. Gen. Louis J. Rumaggi who is retiring after 37 years' service.

Maj. Gen. Viney, who retires after 30 years' service, has served as Seventh Army engineer and as deputy commander and chief of staff for the communications zone in Europe. Before assuming his last position with military operations, he was commanding general of the 1st Logistical Command at Fort Bragg, N. C.

Ice House Dam Construction is discussed by project engineers and consulting board. Project is being built for Sacramento Municipal Utility District as part of their Upper American River Project. Standing is A. H. Ayers, former chief engineer, Utah Construction Co. Others are (l. to r.) Clyde H. Spencer, project engineer for SMUD; Walter Huber, consulting engineer, San Francisco; Julian Hinds, former general manager and chief engineer, Southern California Metropolitan Water District; and David Culver, project manager for Bechtel Corp., designers of the project. Messrs. Huber and Hinds comprise the consulting board. Mr. Hinds is 77, Mr. Huber and Mr. Ayers are 76.

Careers

Public Works

Col. John R. Clifton takes over as district engineer at Honolulu, Hawaii, for the Army Corps of Engineers. In 1956 he joined the Army Ballistic Missile Agency in Redstone Arsenal, Ala. There he was chief of the facilities division and deputy chief in the engineer's office.

Lt. Col. Paavo B. Carlson, former area engineer for the U. S. Corps of Army Engineers in the New England division, has been transferred to the Denver division. He is responsible for construction on the $90-million Titan missile base facilities at Lowry bombing range.

Business

The Watershed Construction Co. will open offices in Bristow, Okla., while supervising construction of reservoirs on the Little Deep Fork upstream flood control project.

Austin, Smith & Associates, Inc., Hawaii, formerly Austin & Towill, Ltd., have elected **Donald S. Austin** president and **Russell L. Smith, Jr.,** vice president and treasurer.

Simon W. Freese and **Marvin C. Nichols** have withdrawn from the Houston engineering firm of Freese, Nichols, Turner & Collie. The company will continue as Turner & Collie, Inc., consulting engineers, and will be under **Nat P. Turner** and **Robert M. Collie.**

Twining Laboratories of Southern California has become incorporated. **George Roalfe,** civil engineer, is assistant to the president, and **William T. Corum** and **Charles Thomas,** both civil engineers, head the Santa Ana and Palmdale, Calif., laboratories.

How to Interpret AERIAL PHOTOGRAPHS

The methods, uses, and advantages of aerial-photographic interpretation . . . where it has and can be effectively used . . . how it can be applied to solve present-day problems in science and engineering . . . these and many other vital facts are fully presented in this practical manual. Arranged in three separate sections for easy reference, it gives clear guidance in recognizing the terrain elements of the photo, interpreting their significance, and formulating them into a dependable set of conclusions.

Shows uses and applications in science and engineering

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Obituaries

Robert Moore, 67, instrumental in the building of DuPont's first cellophane and rayon plants in Buffalo, N. Y. He joined DuPont in 1925 and became assistant chief engineer in 1937.

John M. Crutsinger, 63, assistant county highway engineer for St. Louis County, Mo. He also served for a time as civil engineer for the Missouri Pacific Railroad and was in private business.

R. A. Hummell, 73, former chairman of the board and a director of the Lone Star Cement Corp., New York City. He helped develop the company's interest in Latin America.

Fred M. Luth, 71, a contractor for 40 years and president of Fred M. Luth & Sons, Inc., St. Louis. His company specialized in sewer, street, water works and other municipal construction.

Thomas F. Casey, 69, superintendent of construction for the Youngstown, Ohio Water Department.

Harry J. Parcell, 60, chief of the equipment branch of the Army Engineer District, Eastern Ocean. He was particularly involved in arctic construction projects.

Frank J. Shields, 62, founder of Frank J. Shields, Inc., public works contractors in Southbridge, Mass.

William Owens, 62, owner of the Southern Steel and Erecting Co., Salisbury, N. C.

Norman P. Stromness, 63, Salt Lake City water engineer and former Army engineer.

L. Ivan Mulkey, 58, civil engineer for 29 years with Pacific Power & Light Co.

Waldo F. Hartline, 64, city engineer for Dover, Ohio, and former owner of Arnold, Rosch & Hartline, New Philadelphia, Ohio, engineering firm.

Fred Collins, 68, for 15 years city engineer of Ashtabula, Ohio.

Brig. Gen. Joseph Twitty, 64, retired army officer affiliated with Palmer & Baker, Mobile, Ala. engineering firm. He also worked for several years on flood control projects with the Mississippi River Commission.

George E. Hanson, 70, retired highway designer for the Oregon State Highway Department.

James F. Bly, 72, New York City consulting architect who helped plan the Ten Eyck Houses, a $12-million project in Brooklyn, N. Y. From 1942 to 1950 he served as chief underwriter in the New York office of the FHA.

Elwin G. Speyer, 74, former commissioner of public works and chief engineer of the Buffalo Grade Crossings and Terminal Station Commission. After retiring from public works in 1950, he carried on a private engineering practice.

David Arnold, 70, retired designer and builder of bridges for the Cleveland Union Terminal Co., and the New York Central Railroad. In 1954 he joined Arthur G. McKee & Co., Cleveland, as a structural engineer.

William Payne, 81, retired civil engineer for the Kentucky State Highway Department.

Lester H. Buttenheim, 72, retired president of the McKiernan-Terry Corp., Harrison, New Jersey, manufacturers of heavy construction equipment.

Marvin Chase, 95, first hydraulic engineer for the state of Washington. He built and operated several irrigation projects in eastern Washington during the 1890's and was instrumental in the enactment of the state water code in 1917. He retired in 1946 after serving as consulting engineer on irrigation and hydroelectric projects in Montana and Washington.

Thomas Poindexter, 56, retired division engineer with the North Carolina Highway Department.

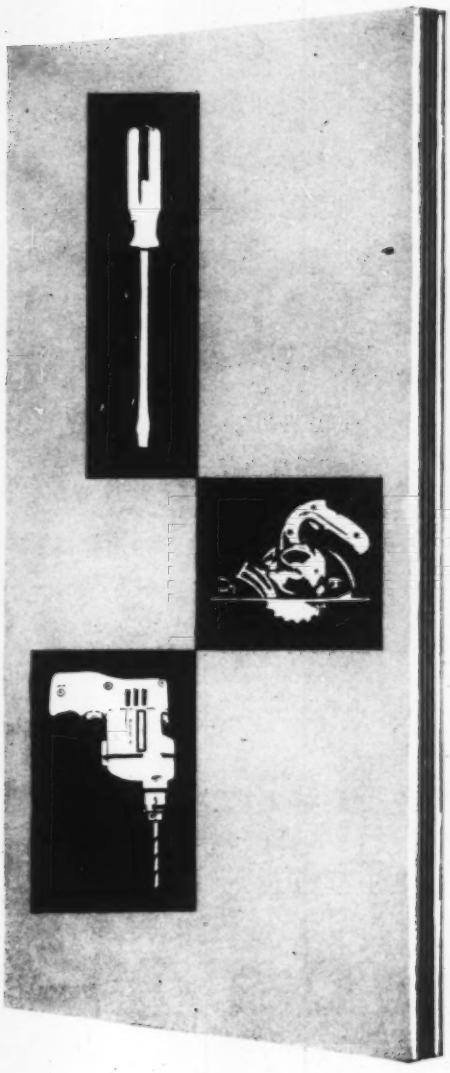
Charles M. Rohda, 60, head of the Charles M. Rohda Construction Co., Seattle, a company he started in 1947. Until then he was general manager of Puget Sound Bridge & Dredge Co.

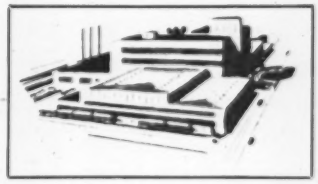
Charles Yeomans, 81, chairman of the board of Yeomans Bros., Co., Melrose Park, Ill., pump manufacturers.

Clyde Berger, 67, retired engineer for United Engineers & Constructors, Inc., Philadelphia.

Ben Keeney, 80, retired civil engineer for the city of Seattle.

Chet A. Kershaw, 44, consulting engineer who was instrumental in organizing the Consulting Engineers Council of Oregon and Washington.





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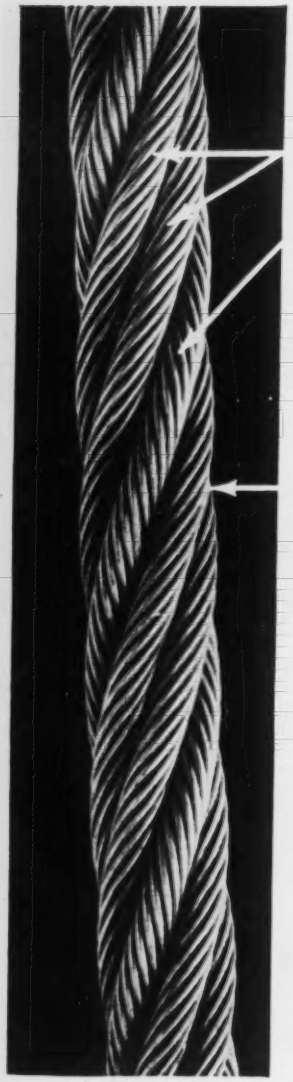

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HERRINGBONE
WIRE ROPE

Interceptor laid under water for . . .

Bellevue, Wash., Sewer Project

Six and one half miles of interceptor sewer on this $2,317,255 job for the Bellevue, Wash., Sewer District, will be laid under the water of Lake Washington. R. W. Beck & Associates, Seattle, are the engineers.

Five contracts break down like this:

Contract	Amount	% of Total	% under Engr. Est.
Sch. 1—53,000 ft of 6-24 in. gravity sewers	$489,478a	21.1	15.8
2—58,000 ft of 8-18 in. gravity sewers	534,768b	23.1	7.2
3—59,000 ft of 6-21 in. gravity sewers	491,066a	21.2	18.4
4—6.5 mile Lake Line interceptor	441,479c	19.0	11.5
5—15 pumping & flushing stations	360,464d	15.6	16.4
Total	$2,317,255	100.0	13.8

a National Constr. Co., Seattle
b H. Kaeser, Seattle
c Frank Coluccio Constr. Co., Seattle
d Paul Jarvis, Inc., Ewing, Wash.

Awards were on the concrete pipe alternate for the gravity sewers, which competed with higher priced clay pipe. All pressure pipe will be asbestos cement.

For the sewage flush stations, award was on 330 gpm Ingersoll Rand pumps. Bids were taken on alternate Worthington pumps. For the sewage treatment plants, the award was on the Worthington pumps, the second pump alternate, the first calling for Yeoman Bros. pumps. Bids were also submitted by individual contractors on American Well Works, Fairbanks-Morse, and Chicago Pump Co. pumps.

A bridge crossing is included in the work called for under Sch. 1. Sch. 2 and 3 include concrete pavement crossings.

Prevailing wages include: carpenter $3.32; trenching machine operator $3.88; pipelayer $3.15; crane & shovel operator $3.93; common laborer $2.85.

The bidding included:

Sch. 1—Gravity Sewer

1C National Constr. Co., Seattle	$489,478
2 H. Kaeser Co., Seattle	528,205
5 Valley-MK Co., Seattle	667,445
EE R. W. Beck & Asso., Seattle	581,652

Sch. 2—Gravity Sewer

1 National Constr. Co., Seattle	$516,797*
2C H. Kaeser Co., Seattle	534,768
5 Valley-MK Co., Seattle	637,456
EE R. W. Beck & Asso., Seattle	575,941

Sch. 3—Gravity Sewers

1C National Constr. Co., Seattle	$491,066
2 H. Kaeser Co., Seattle	544,603
5 Valley-MK Co., Seattle	605,619
EE R. W. Beck & Asso., Seattle	601,148

Sch. 4—Lake Line Interceptor

1C Frank Coluccio Constr. Co., Seattle	$441,479
2 Valley-MK Co., Seattle	485,465
4 Manson Constr. Co., Seattle	530,955
EE R. W. Beck & Asso., Seattle	499,104

Sch. 5—Flush & Pump Stations, and Pumps

1C Paul Jarvis, Inc., Palmer, Wash.	$360,464
2 Wayne Constr. Co., Seattle	361,873
7 Butler Constr. & Engr. Co., Seattle	450,637
EE R. W. Beck & Asso., Seattle	431,184

*Contractor has two of these sewer contracts and has disqualified himself on this one.

Schedule 1

Bids: 5-29-59 Items	Unit	Quantity	Unit Prices 1C	2
Excavation, trench, 6" pipe	lf	10,158	$2.65	$2.85
8"	lf	35,112	2.75	3.28
10"	lf	2,635	2.80	3.80
12"	lf	2,458	2.90	3.29
24"	lf	2,250	10.00	7.69
rock	cy	50	5.00	19.12
Sheeting left in place	Mbm	5	60.00	68.30
Fill & backfill, pit run gravel	cy	7,000	4.00	3.07
gran-fill, additional	cy	150	4.00	6.15
crushed rock	cy	200	4.50	4.78
Conc gravity sewer pipe, 6"	lf	10,158	1.95	1.71
8"	lf	35,112	2.45	2.14
10"	lf	2,635	3.20	2.92
12"	lf	2,468	3.65	3.70
24"	lf	2,250	7.55	9.36
Asb cmt pressure pipe, 8"	lf	900	4.35	5.09
14"	lf	8,060	8.50	9.88
Conc tees, 6" on 6"	ea	174	1.00	3.49
8"	ea	422	1.00	1.36
10"	ea	33	3.00	1.32
12"	ea	19	5.00	1.36
24"	ea	19	10.00	4.10
Riser pipe, 6"	lf	495	3.00	5.46
Manhole, standard	ea	154	200.00	298.00
drop	ea	22	325.00	430.29
extra depth	lf	541	20.00	24.59
Cleanouts	ea	22	60.00	34.15
Connection to exist manhole	ea	3	100.00	116.11
Conc pavement crossing	ea	7	1,200	1,366
Bridge crossing	ls	job	5,000	4,378
Pressure line vent assembly	ea	1	900.00	949.37
Culvert pipe, 12"	lf	100	2.50	4.23
Sales tax			18,826	20,316

Completion schedule: 260 cal days. Liq. dam. $100 day

Schedule 2

Bids: 5-29-59 Items	Unit	Quantity	Unit Prices 1	2C
Excavation, trench, 6" pipe	lf	5,329	$2.50	$3.29
8" pipe	lf	41,654	2.75	3.32
10" pipe	lf	265	3.50	4.39
12" pipe	lf	5,624	2.65	3.34
18" pipe	lf	5,033	14.00	6.97
rock	cy	50	5.00	19.39
Sheeting left in place	Mbm	5	60.00	69.25
Fill & backfill, pit run gravel	cy	7,200	4.00	3.12
gravel fill, additional	cy	160	4.00	6.23
crushed rock	cy	250	4.50	4.85
Conc gravity sewer pipe, 6"	lf	5,329	1.95	1.73
8"	lf	41,654	2.40	2.17
10"	lf	265	3.20	3.10
12"	lf	4,232	3.65	3.75
18"	lf	5,033	6.35	7.34
Asb cemt sew pipe, cl 1, 12"	lf	1,392	5.00	7.42
pressure pipe, 6"	lf	1,470	3.80	4.49
8"	lf	500	4.60	5.71
14"	lf	1,900	8.60	10.01
Tees, conc, 6" on 6"	ea	105	1.00	3.55
8"	ea	663	1.00	1.39
10"	ea	2	3.00	1.38
12"	ea	16	5.00	1.39
18"	ea	14	8.00	4.16
asb cmt, 6" on 12"	ea	11	20.00	23.55
Riser pipe, 6"	lf	243	3.00	5.54
Manhole, standard	ea	166	200.00	302.00
drop	ea	17	325.00	436.28
extra depth	lf	618	20.00	24.93
Cleanouts	ea	24	60.00	34.63
Connection to existing MH	ea	2	100.00	117.73
Concrete pavement crossing	ea	6	1,200	1,385
Sales tax			19,877	20,568

Completion schedule: 280 cal. days. Liq. dam. $100 day

Schedule 3

Bids: 5-29-59 Items	Unit	Quantity	Unit Prices 1C	2
Excavation, trench, 6" pipe	lf	9,280	$2.40	$3.24
8" pipe	lf	37,520	2.80	3.31
10" pipe	lf	5,965	3.70	4.37
12" pipe	lf	1,481	2.80	2.92

(Turn the page)

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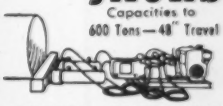

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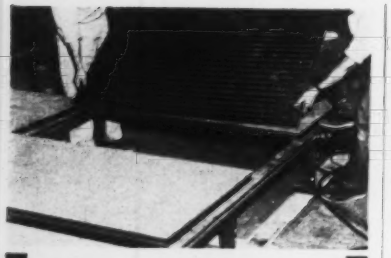

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. . . Bellevue, Wash. Sewer Project

Bids: 5-29-59 Items	Unit	Quantity	Unit Prices 1 C	2
Excavation, trench, 21" pipe	lf	4,801	$5 00	$4 45
rock	cy	50	5 00	27 54
Sheeting left in place	Mbm	5	60 00	68 85
Fill & backfill				
pit run gravel	cy	8,400	4 00	3 10
granular fill, additional	cy	190	4 00	6 20
crushed rock	cy	300	4 50	4 82
Conc gravity sewer pipe, 6"	lf	9,280	1 95	1 72
8"	lf	37,520	2 40	2 16
10"	lf	5,965	3 20	3 08
12"	lf	1,481	3 65	4 57
21"	lf	4,801	7 35	8 73
Asb cmt pressure pipe, 8"	lf	3,470	4 20	5 67
10"	lf	1,450	5 20	6 49
Conc tees, 6" on 6"	ea	180	1 00	3 53
8"	ea	625	1 00	1 37
10"	ea	97	3 00	1 38
12"	ea	23	5 00	1 37
21"	ea	37	9 00	4 13
Riser pipe, 6"	lf	582	3 00	5 51
Manhole, standard	ea	183	200 00	300 00
drop	ea	8	325 00	433 76
extra depth	lf	701	20 00	24 79
Cleanout	ea	17	60 00	34 43
Concrete pavement crossing	ea	9	1,200	1,377
Sales tax			18,887	20,947

Completion schedule: 300 cal. days. Liq. dam. $100 day

Alt. Pipe & Tees for Gravity Sewers, Sch. 1, 2 & 3

Bids: 5-29-59 Items	Unit	Unit Prices *1	**2
Sewer pipe, clay, 6"	lf	$1 96	$2 20
8"	lf	2 58	2 60
10"	lf	3 62	3 80
12"	lf	4 90	4 60
18"	lf	4 90	nb
asb cmt, 6"	lf	1 93	2 20
8"	lf	2 62	2 70
10"	lf	3 68	4 00
12"	lf	5 05	4 90
18"	lf	7 00	9 00
tees, clay, 6"	lf	4 32	5 00
8"	lf	4 56	7 00
10"	lf	9 33	9 00
12"	lf	9 98	11 00
abs cmt, 6"	ea	9 85	10 00
8"	ea	8 83	10 00
10"	ea	10 35	13 00
12"	ea	14 10	18 00
18"	ea	27 43	36 00

*H. Kaeser Co., Seattle, Wash.
**National Constr. Co., Seattle, Wash.

Schedule 4

Bids: 5-29-59 Items	Unit	Quantity	Unit Prices 1 C	2
Lake line interceptor, in pl, bed type I	lf	26,225	7 98	$8 50
II	lf	600	6 83	10 00
III	lf	40	17 83	8 50
IV	lf	910	30 83	14 00
V	lf	8,200	6 83	9 70
Asb cmt pressure SP, 6"	lf	170	5 75	10 20
8"	lf	765	6 15	10 90
Serv conn, type I & II bed	ea	135	190 00	125 00
6" SP	lf	2,540	2 71	8 20
8" SP	lf	250	4 50	9 10
type IV bed	ea	4	900 00	680 00
6" SP	lf	128	7 21	15 80
CI riser, 6"	lf	60	6 30	8 80
type V bed	ea	50	165 00	70 00
Cleanout inceptor, tpl&II bed	ea	48	180 00	170 00
Timber pile	lf	130	6 00	2 30
drive	ea	4	125 00	150 00
Exc, grav sew trench, 6" pipe	lf	1,720	2 50	3 90
8" pipe	lf	3,420	2 50	3 00
6" pipe	lf	1,410	2 50	2 40
Sheeting left in place	Mbm	2	30 00	350 00
Conc grav SP, 6"	lf	1,520	3 00	2 30
8"	lf	3,420	3 42	2 60

Bids: 5-29-59 Items	Unit	Quantity	Unit Prices 1 C	2
Asb cmt grav SP, 10"	lf	1,410	$4 00	$4 20
6"	lf	200	3 00	2 70
Tees, conc, 6" on 6"	ea	40	9 80	1 20
8"	ea	60	9 30	1 20
asb cmt, 6" on 10"	ea	11	11 00	14 80
Manhole, standard	ea	27	275 00	230 00
drop	ea	3	425 00	350 00
pressure	ea	13	375 00	605 00
extra depth	lf	145	17 00	20 00
CI riser, 6"	lf	60	6 00	3 50
Cleanout gravity line	ea	5	70 00	120 00
Fill & backfill, pit run gvl	cy	350	2 75	2 90
additional granular fill	cy	30	3 50	5 20
Pump sta overflow lines, in pl				
on shore, 8" pipe	lf	150	6 45	10 00
12" pipe	lf	220	9 75	15 00
offshore, 8" pipe	lf	325	7 20	14 00
12" pipe	lf	50	9 75	18 00
Hunts Pt. pump sta Of	ea	1	180 00	3,500
Sales tax			16,980	18,672

Completion schedule: 315 cal days. Liq. dam. $100 day

Schedule 5

Bids: 5-29-59 Items	Unit	Quantity	Unit Prices 1 C	2
Flush station #1	ls	job	$5,200	$4,232
#2	ls	job	5,600	4,213
#3	ls	job	8,700	6,275
#4	ls	job	6,800	6,450
Ingersoll Rand pumps, 330 gpm, flush station #1	ls	job	500 00	479 00
#2	ls	job	500 00	479 00
#3	ls	job	900 00	958 00
#4	ls	job	500 00	499 00
alt. Worthington pumps, flush station #1	ls	job	nb	550 00
#2	ls	job	nb	550 00
#3	ls	job	nb	1,100
#4	ls	job	nb	550 00
Sewage pump sta,				
Yarrow Point	ls	job	21,000	25,600
Hunts Point	ls	job	22,000	19,700
Evergreen East	ls	job	21,000	19,100
Evergreen West	ls	job	29,000	25,200
Lake Crest	ls	job	22,000	27,100
Medina	ls	job	19,000	24,600
Valley-Hi	ls	job	19,000	19,700
Apple Valley	ls	job	20,000	16,900
Cozy Cove	ls	job	34,000	28,900
Fairweather Basin	ls	job	24,000	25,000
Medina School	ls	job	40,000	45,600
Worthington pumps,				
Yarrow Point, 330 gpm	ls	job	1,600	1,480
Hunts Point, 330 gpm	ls	job	1,600	1,480
Evergreen East, 330 gpm	ls	job	1,600	1,450
West, 330 gpm	ls	job	1,600	1,450
Lake Crest, 330 gpm	ls	job	1,600	1,480
Medina, 425 gpm	ls	job	2,100	1,920
Valley-Hi, 300 gpm	ls	job	3,700	3,540
Apple Valley, 180 gpm	ls	job	1,900	1,770
Cozy Cove, 480 gpm	ls	job	2,800	2,660
Fairweather Basin, 350 gpm	ls	job	2,800	2,660
Medina School, 800 & 1200 gpm	ls	job	6,600	6,340
alt. Yeoman Bros. pumps,				
Yarrow Point	ls	job	2,000	1,960
Hunts Point	ls	job	2,000	1,960
Evergreen East	ls	job	2,000	1,920
West	ls	job	2,000	1,920
Lake Crest	ls	job	2,000	1,960
Medina	ls	job	2,600	2,475
Valley-Hi	ls	job	5,000	5,000
Apple Valley	ls	job	2,400*	2,330
Cozy Cove	ls	job	4,500	4,500
Fairweather Basin	ls	job	4,500	4,500
Medina School	ls	job	8,700	8,700
Conn to existing sewage plant	ls	job	17,000	19,300
Asph conc pressure pipe, 14"	lf	180	11 11	8 00
Sales tax			13,864	13,918

*Pump 51% effective instead of the 64% specified
Completion schedule: 290 cal days. Liq. dam. $100 day

Kansas Grading, Paving Costs Rose in '58

Contractors' bid prices on Kansas state highway and bridge projects let in 1958 rose for grading and paving, but dipped for bridge steel.

Biggest increases, 6% to 7%, came in grading and concrete pavement. Bituminous bids averaged about 3% higher than in '57. (see table)

On the downside, bridge steel, aggregate base course and light surfacing dipped 1%. Concrete for bridges held at 1957's high point.

Year	Grading, culverts	Concrete pavement	Aggr. base course	Bit. constr types	Light type surfacing	Bridges Concrete	Bridges Steel
1940	100	100	100	100	100	100	100
1946	168	134	153	152	129	212	142
1950	159	193	117	158	113	282	262
1955	199	242	169	205	153	348	320
1956	188	249	159	198	122	338	336
1957	196	241	167	169	144	372	368
1958	209	255	165	174	143	372	363

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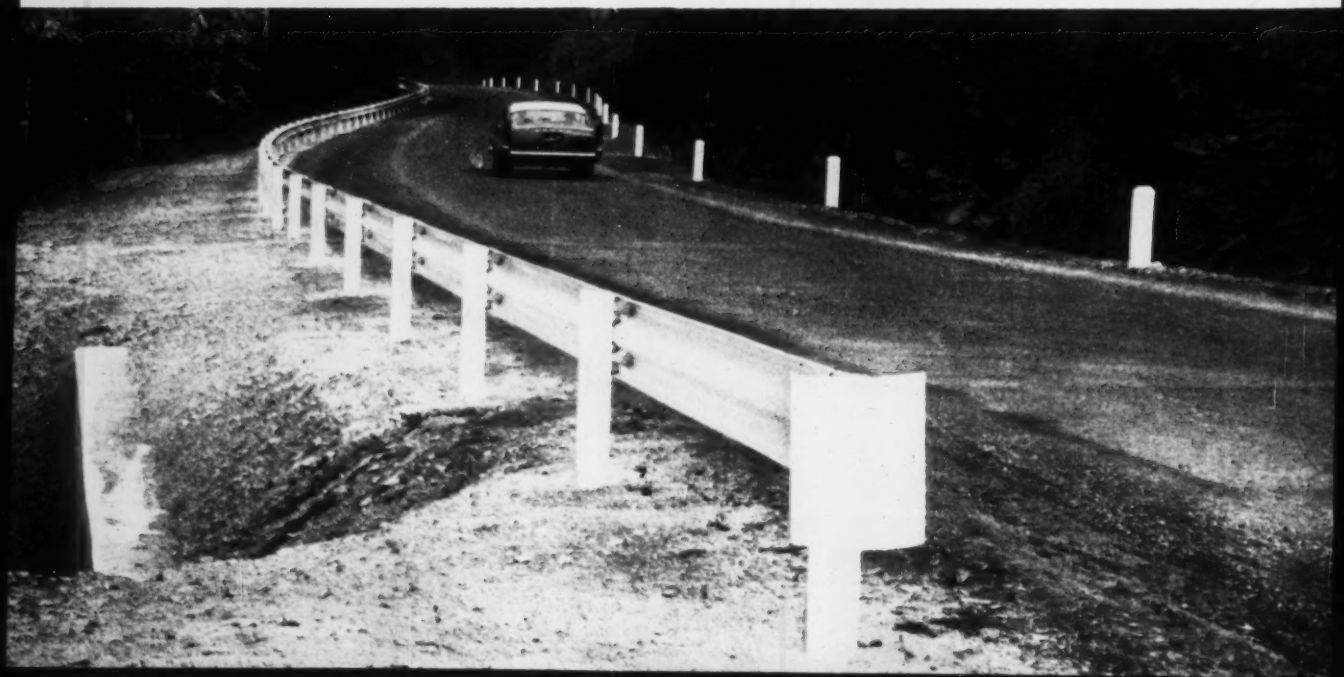

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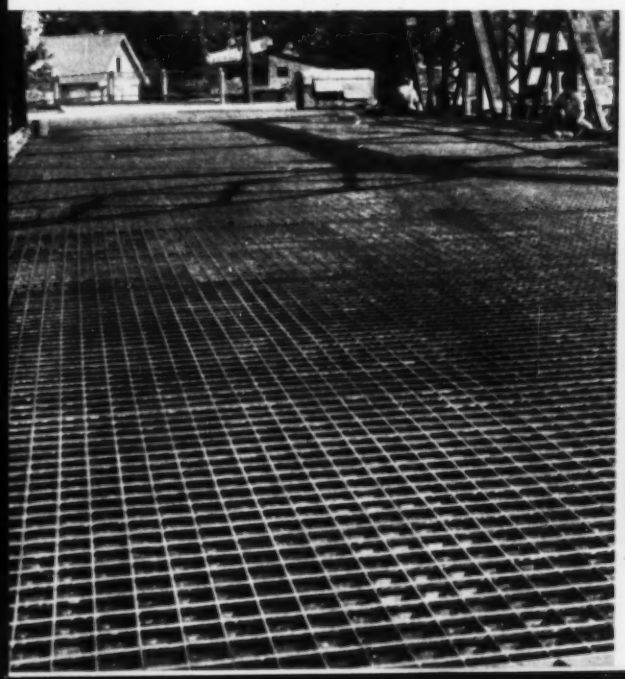

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Atlanta	$1.825	$1.825	$3.85	$3.20	$3.30+7½¢	$3.325	$3.25	$3.50+10¢	$3.70+20¢	$1.75	$1.85	$2.10
Baltimore	2.20+7½¢	2.20+7½¢	4.10+10¢	3.30+7½¢f	3.90+7½¢	3.80 3.95+10¢	3.80+7½¢	3.75+7½¢	3.74+9½¢	2.15+7½¢	2.15+7½¢	2.25+7½¢
Birmingham	1.75	1.85	3.85	2.95	3.45+10emn	2.77	3.17	3.65	3.40+10eRp	1.83	2.02	2.35
Boston	2.65+10¢	2.55+10¢	3.80+30¢	3.45+10¢	4.02+20¢	3.90+10¢	3.65+45¢	3.75+25¢	3.20+10¢	2.70+8¢	2.70+8¢	2.70+8¢
Chicago	3.02½+7½¢	3.02½+7½¢	4.07½+7½¢	3.75+20eo	4.15+16en	3.75+5¢	3.95+23¢	4.1C	3.95+23¢	2.48+15¢		
Cincinnati	2.75	2.65	3.90+10¢	3.57½	3.80+10¢	3.375 3.60	3.725	3.92+4¢	3.80+9½¢	2.55+2½¢	2.65+2½¢	2.75+2½¢
Cleveland	3.256	3.1656	3.965+10e6	3.996	3.89+10e6	3.996	3.996a	4.056	3.80+19e6	2.82+15ea	2.82+15ea	2.82+15ea
Dallas	1.80	1.80	3.95	3.356	3.425+7½¢	3.375	3.625+13¢	3.50+7½¢	3.575+8½¢	1.80 2.625	1.80 2.625	1.80 2.625
Denver	2.25	2.25	3.90	3.50	3.41+7½¢	3.15	3.625+12¢	3.75+14¢	3.80+10¢	2.30	2.50	2.65
Detroit	2.80+42¢	2.80+42¢	3.90+30¢	3.55+42¢	3.90+22½¢	3.55+36¢	3.66+34¢	3.90+44	3.835+17½¢	2.95	2.95	2.95
Kansas City	2.455	2.505	3.95	3.50	3.55	3.445	3.75	3.60+28¢	3.60+9½¢	2.43	2.43	2.505
Los Angeles	2.88+10¢	2.88+10¢	4.00+15¢	3.60+20¢	4.07½+23½¢	3.61+15¢	4.125+12½¢	4.40+44	4.10+51¢	3.15½+10¢	3.15½+10¢	3.345+10¢
Minneapolis	2.70	2.70	3.875	3.45	3.62	3.45	3.40+33¢	3.55+39¢	3.62+26¢	2.70	2.70d	2.85
New Orleans	1.80c	1.80c	3.575+7½ed	3.10d	3.40+7½ed	3.225+7½ed	3.12+5e¢k	3.475+7½¢	3.50+15ed	2.575+7½ed	2.575+7½ed	2.575+7½ed
New York	3.30+26¢c	3.30+26¢c	4.80+41¢	4.40+35e6	4.60+47e j	4.65+37¢	4.50+62¢	3.90+1.272R	4.50+54¢	2.35+22½¢	3.275+31½¢	3.275+31½¢*
Philadelphia	R* 2.50	2.40+10¢	4.10+17¢	3.785	4.30+23¢	3.935 4.215	4.15+15¢	4.22½+16¢	4.10+31½¢		2.57+15½¢	
Pittsburgh	2.575+20¢	2.125+20¢	4.30+20¢	3.775+20¢	4.15+20¢	3.73+20¢	3.95+20¢	4.35+32½¢	4.00+20¢	2.37+20¢	2.51+20¢	2.61+20e*
St. Louis	2.775+10¢	2.775+10¢	4.05+32½¢	3.725+10¢c	3.75+7½¢	3.825	3.90+17½¢	4.11+31¢	4.07½+20¢	2.80+12½¢	2.80+12½¢	2.80+12½¢
San Francisco	2.865+10¢	2.865+10¢	4.25+42½¢	3.55+30½¢	3.85+20¢	3.405+10¢	3.79+63¢	4.22+29¢	4.14+54¢	2.81+20¢	2.75+20	2.89+20¢
Seattle	2.85+10¢	2.85+10¢	4.15+10¢	3.32+10¢	3.59+10¢	3.59+20¢	3.57+30¢	3.65+26¢	3.81+24¢	3.15+20¢	3.15+20¢	3.35+20¢
Montreal	1.60+1eq	1.60+4eq	2.40+5eq	2.20+5eq	2.45+5¢	2.30+5¢	2.35+5¢	2.35+5¢	2.47+5e¢	1.60+4¢	1.60+4¢	1.60+4¢
Toronto	1.80+7¢	1.80+7¢	3.00+12¢	2.80+12¢	2.85+11¢	3.05+12¢	3.00+20¢	3.30+13¢	3.20+13¢	1.85+13¢	1.85+7¢	1.85+7¢

	Tractor Operators Incl. bulldozers: 34-49 hp	70-100 hp	100 & over	Tractor scraper: 15-16 cy	Power cranes & shovels: ½ cy	¾ cy	Motor grader oper	Air comp oper	Air tool oper
Atlanta	$2.85	$3.00	$3.00	$2.85	$3.375	$3.525	$2.85	$2.275	$1.925
Baltimore	3.65+10¢	3.65+10¢	3.65+10¢	3.65+10¢	4.05+10¢	4.05+10¢	3.65+10¢	3.25+10¢	2.25+7½¢
Birmingham	2.79	2.79	2.79	2.93	2.93	2.93	2.89	2.52	1.90
Boston	3.52½+10¢	3.52½+10¢	3.52½+10¢	3.52½+10¢	3.90+10¢	3.90+10¢	3.52½+10¢	3.45+10¢	2.90+7¢
Chicago	3.50+5¢	3.65+5¢	3.30+5¢	3.30+5¢	3.80+5eR	3.80+5eR	3.50+5¢	3.40+5¢	3.70+5¢
Cincinnati	3.375	3.375	3.375	3.375	3.375	3.60	3.60	3.60	3.90
Cleveland	3.746	3.746	3.746	3.746	3.996	3.996	3.746	3.6156	3.6156
Dallas	1.80 2.625	1.80 2.625	1.80 2.625	1.80 2.625	3.10A	3.10A	1.80 2.625	1.95	1.95
Denver	2.40	3.00	3.00	3.00	3.15	3.15	3.00	3.00	2.53
Detroit	3.55+36¢	3.55+36¢	3.55+36¢	3.55+36¢	3.55+36¢	3.55+36¢	3.55+36¢	3.275+15¢	2.93+34¢
Kansas City	2.75	3.20	3.20	3.20	3.445	3.445	3.20	3.20	2.55
Los Angeles	3.91+15¢	3.91+15¢	3.91+15¢	4.01+15¢	4.01+15¢	4.01+15¢	4.01+15¢	3.13+15¢	3.09+10¢
Minneapolis	3.08	3.30		3.30	3.52	3.78	3.08	2.97	2.85
New Orleans	3.225+7½ed	3.225+7½ed	3.225+7½ed	3.225+7½ed	3.225+7½ed	3.225+7½ed	3.225+7½ed	2.575+7½ed	1.90e
New York	4.025+32¢	4.025+32¢	4.025+32¢	4.15+33¢	4.90+39¢	4.90+39e6	4.15+33¢	4.15+33¢	4.15+21¢
Philadelphia	R* 3.52+10	3.665+10	3.665+10	3.79+10	4.215+10	4.215+10	3.765+10	3.41+10	2.35
Pittsburgh	3.44+10¢	3.44+10¢	3.44+10¢	3.44+10¢	3.64+10¢	3.64+10¢	3.64+10¢	3.15+10¢	2.30+20¢
St. Louis	3.825	3.825	3.825	3.825	3.825	3.825	3.825	3.275	3.275
San Francisco	3.70+20¢	3.70+20¢	3.70+20¢	3.70+20¢	3.85+20¢	3.85+20¢	3.75+20¢	3.10+20¢	2.955+20¢
Seattle	3.56+20¢	3.56+20¢	3.56+20¢	3.56+20¢	3.93+20¢	3.93+20¢	3.65+20¢	3.29+20¢	3.05+10¢
Montreal	q 1.80+4¢	2.03+4¢	2.03+4¢	2.03+4¢	2.30+5¢	2.30+5¢	2.03+4¢	1.90+4¢	1.90+4¢
Toronto	2.30+10¢	2.40+10¢	2.40+10¢	2.40+10¢	2.90+12¢	3.05+12¢	2.70+11¢	2.40+10¢	2.40+10¢

ENR Skilled Average (Bricklayers, Carpenters, Iron Workers): $3.897. ENR Common Average $2.61

Description of fringe benefits last appeared Feb. 26; will next appear in Sept. 17 Cost Issue.

DEFERRED WAGE INCREASES UNDER PRESENT CONTRACTS: 1960: a May 1; 10¢ b May 1; 12¢ k May 1; &. l May 1; 10¢ m Jan. 1; 15¢ n Jul. 1; 8¢ o Jun. 30; 22½¢ s Apr. 1; 15¢. **1959:** c Dec. 1; 10¢ d Nov. 1; 10¢ e Nov. 1; 5¢ (Oct. 1; 20¢ g Sept. 1; 11¢ h Aug. 1; 7½¢ j Nov. 1; 7½¢ p Sept. 1; 11¢ q Oct. 1; 5¢

* Philadelphia wage rates revised, watch analysis

BUILDING BOARD & LATH AND INSULATION—DELIVERED TRUCKLOAD LOTS

	Gypsum Plaster Board tapered edge per Msf ft: ½"	⅝"	Gypsum Board Lath plain or perf per Msf ft: ⅜" x 16" x 48"	Gypsum Sheathing tongue & groove per Msf ft: ½" x 2' x 8'	Fiber Board Sheathing asph impreg & coat per Msf ft: ½" sq ed	½" T&G	Fiber Board Insulation sq edge, paint per Msf ft: ½"	Mineral Wool Insulation loose, per 40-lb bag: a	3" batts per M sf	Glass Fiber Insulation loose, per 40-lb bag: a	3" batts per M sf	Aluminum Foil 80¢ Kraft 1 side foil per roll of 250 s. f.	Expansible Blanket 2 layers foil per Msf ft
Atlanta	$65 00F	$55 00F	$42 50F	$68 00F	$72 00F	$127 00F	$75 00F	1 59z	$70 00F	$2 00	$80 00F	$4.77qs	
Baltimore	51 70	45 55	34 25	55 35	65 00	108 50	69 00	1 30F	66 50F	1 50F	45 00F	4 00F	$33 50F
Birmingham	68 90H	57 00H	47 77H	75 00H	67 50H	140 50H	93 50H	1 40	70 00	1 60	75 00	3 77gG	
Boston	60 00mH	50 00mH	36 00mH	60 00mH	65 00H	120 00H	79 00AmH	1 45HH	75 00H	.....	75 00H	5 30zHS	53 50gH
Chicago	67 00	54 00	45 00	62 00	87 00	123 00	87 00	1 85	80 00	.....	63 65s	5 25s	
Cincinnati	48 00eH	42 85eH	32 05eH	51 16eH	71 00eH	125 00eH	72 50eH	1 20eH	62 50eH	1 20eH	74 00eH	3 28feJ	50 00eJ
Cleveland	62 00CF	56 50CF	41 50CF	65 00CF	80 00CF	129 00CF	80 00CF	1 35 1 50H	72 00H	.....	63 75	17 50eeJ	55 00J
Dallas	55 00	52 50	42 50	60 00	68 75	118 00	68 75	2 00	65 00	1 45	70 62	5 00gAG	45 00
Denver	66 50H	58 50H	45 00H	68 75H	84 00H	130 00H	84 00	1 50b	65 00eb	1 75b	65 00a	5 25	48 65
Detroit	66 00K	55 00K	43 00K	65 00K	62 50DK	103 50DK	62 50DK	1 30b	50 00	1 95b	88 00		
Kansas City	72 00H	62 00H	45 00H		75 00H	122 00H	80 00H	1 40H	75 00H	1 60H	75 00H	3 60d	53 98
Los Angeles	Q 66 00F	60 50F	0 33zF	64 50F	75 00F	125 00F	90 00F	76 00HeF	84 00F	1 35a	84 00	4 40g	
Minneapolis	F 75 00F	65 00F	0 41zL	75 00F	95 00F	130 00F	78 00F	2 25gF	80 00F	2 10F	80 00F	6 25F	
Montreal	58 00M	49 30M	37 41 50M	53 00M	61 75M		58 50M	1 50M	66 00M	1 50M	66 00M	9 00gM	56 00M
New Orleans	57 00H	52 00H	45 00H	60 00H	67 00H	140 00H	80 00H	2 00L	70 00*	.....	.....		
New York	57 50H	50 00H	36 00H	52 50H	75 00	120 00	75 00	1 55b	68 50	.....	51 00R	4 38eH	54 50eH
Philadelphia	HR* 52 50	46 00	36 00	52 00	70 00	105 00	70 00	1 65	56 00	1 40	50 00	5 25	60 00
Pittsburgh	74 00K	65 00K	40 00K	63 00K	62 50K	102 50K	57 50K	1 05eK	55 00K	1 05aK	55 00K	3 90eqK	38 50K
St. Louis	65 00HO	55 00HO	40 00HO	70 00HO	76 00HO	120 00HO	90 00HO	1 15gHO	85 00HO	2 00gPHO	74 00HO	4 50eqHO	
San Francisco	57 00F	48 00F	0 35zF	58 00F	68 00F	109 00F	67 00F	1 75F	66 50F	1 75F	66 50F	5 16	60 00F
Seattle	66 50K	57 65K	51 05K	65 00K	74 50K	125 00K	73 50K	1 15eK	58 00K	1 90*pK	51 00*LKk	4 25K	46 50EK
Toronto	58 00	50 00	38 00L	64 50	61 50T		70 00T	1 65	65 50	.....	65 50	14 75n	46 00

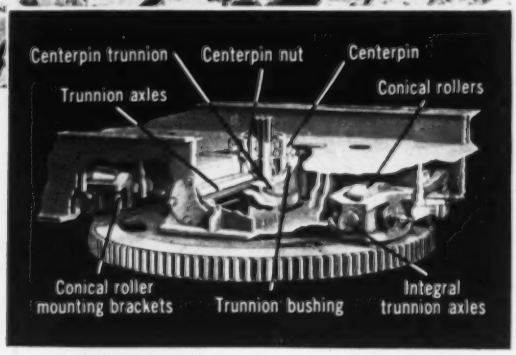
*• F.o.b. warehouse. •a Semi thick. •b 30# bag. •c 12" to 24" width. •d 40# kraft paper, 5 Msf, 100 500 rolls. •e 20# sq ft bag, 4" thick. •f Full trailer loads. •g 80# kraft paper backing 400 rolls or over. •h LCL. •i 40#. •j 80#. •k 2". •m 8 to 10 ton quantities. •n Distributor's siding. •o Per Msf roll. •p 32# bag. •q 500 sf. •r Per cw. •s 35# bag. •t 26# bag. •u Flame proof $75. •w F.o.b. city. •x Sq. yd. •y 30# bag. •z Spun rock wool. •A 650 sf. •B ton. •C F.o.b. plant, freight allowed. •D CL. •E 10 Msf. •F less 2% disc, 10th. •G 1½ of 1%, 10 days. •H 2% disc, 10 days. •J 1% disc, 10 days. •K less 2% for cash. •L 5% disc, 10th mo. •M fed. tax incl. •N 1% disc, 10 days. •O add 2% sales tax. •P 50 lb. bags. •Q add 4% sales tax. •R revised. •S 45 lb. •T less 2%, 30 days. * Philadelphia prices revised, watch for analysis*

MEXICO CITY WAGES & PRICES

WAGES, av per week, 8 hr day (pesos)		Aug '59	Sept '59
Common labor, building (peons)		87 50	87 50
	heavy const (peons)	87 50	87 50
Skilled labor,	carpenters 1 cl	175 00	175 00
	bricklayers 1 cl	210 00	210 00
	struct. ironworkers	280 00	280 00

MATERIALS PRICES, F.o.b. City (pesos)		Aug '59	Sept '59
Struct. steel shapes, fob Monterey			
	I-beams, 3 x 3 x 4" per metric ton	2400 00	2400 00
Reinf. steel, corrugated rods, per ton			
	¾"–1½" x 11 meters	1900 00	1900 00
	⅜"–1" x 11 meters	1900 00	1900 00

		Aug '59	Sept '59
Gravel, truckload, per cu meter			
	Blue gravel	25 00	25 00
Cement, std. port. (Tolteca)		2 40	2 40
Lumber, 2"x4" 1st class pine, per M sq. ft.		2200 00	2200 00
	2"x4" 2nd class pine, per M sq. ft.	1900 00	1900 00



Exclusive centerpin trunnion and oscillating roller design eliminates concentrated centerpin loadings. Self-aligning centerpin trunnion distributes load evenly. Oscillating Conical rollers assure full-face contact with the roller path.

Put the shock in the rock...

come back for more!

TOUGH CUTS OR BRUTE LIFTS, BURLY 1½ TO 3-YD. K-MODELS OUT-MANEUVER SMALLER RIGS... OUT-PRODUCE LARGER MACHINES!

Always on top of the heavyweight jobs! Your operator in the cab of a Link-Belt Speeder King-size K-model *knows* he need *never* baby this machine!

He feels the smooth surge of greater *usable* hp through hefty, extra-size shafts, gears and clutches. He socks the dipper in — rugged K-model structural members soak up the shock.

And K-models deliver these output-boosting advantages: Speed-o-Matic, the *true* power hydraulic controls . . . fast, effortless power hydraulic steer . . . *plus* bonus usable hp.

If you'd like more facts demonstrating how King-size K-models (1½ to 3-yd. capacity) outstrip the field, see your distributor or write Link-Belt Speeder Corporation, Cedar Rapids, Iowa.

11,232-A

LINK-BELT SPEEDER

It's time to compare . . . with Link-Belt Speeder

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, MARIE MORAVSIK, ELAINE CHOMYAK, ELIZABETH WERRA, ELEANOR QUERET, Reports, J. H. WEBBER, E. R. HUBER, Statistics.

NEW ENGLAND

BUILDINGS—BA

▲ **Conn., New Canaan**—CHURCH—BA 9/9—St. Mark's Episcopal Church, 117 Oenoke Ridge, church, fellowship hall and Sunday School Oenoke Ridge. $1,000,000. Sherwood, Mills & Smith, 65 Broad St., Stamford, archts. Werner, Jensen & Korst, 641 Summer St., Stamford, engrs. CD 9/30/58.

Mass., Marblehead—SCHOOL—BA 9/10—Town, Pleasant St., high school addn. $400,000. Plans deposit $40. Kilham, Hopkins, Greeley & Brodie, 9 Arlington St., Boston, Mass., archts. CD 5/6.

Conn., Simsbury—SCHOOL—BA 9/15—Town, Town Hall, 2 story, Junior High School addn., Firetown Rd., $600,000. Plans deposit $50. Russell & Gibson & Assocs., 1005 Farmington Ave., West Hartford, archts. CD 7/23.

HEAVY CONSTRUCTION—LB & CA

▲ **VERMONT**—State Dpt. Hys., State House, Montpelier.
Perini Corp., 73 Montwaite Ave., Framingham, Mass., CA **$4,924,764**, grade, subbase, Bit. concrete, surf. course, two 4 span composite WF beam bridges, Rte. 91, Proj. 1-91-1 (9) Brattleboro, Summerstown and Putney. Bids Aug. 14. CD 8/18, under LB.

BUILDINGS—LB & CA

▲ **M. S. Kelliher Co.**, 294 Washington St., Boston, Mass., CA **$1,446,800**, est. $1,500,000, JUNIOR HIGH SCHOOL, Town Farm site, WAKEFIELD, MASS. Town, Atwell Junior High School, Wakefield, Mass. Bids Aug. 12. CD 8/17, under LB.

▲ **Leger Storr**, North Rd., Hazardville, Conn., Owner Builds. **$2,000,000**, 200 HOUSES, Neelans Tract, THOMPSONVILLE, CONN. CD 1/15/57.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

† **N. Y., Brooklyn**—PAVING—BA 9/9—P. Wks. Office, New York Naval Shipyard, Bldg. No. 77, constr. Quarters "A" paving of roadway, New York Naval Shipyard. NBy-21354, Spec. No. 21354/59. Under $10,000.

Pa., Phila.—BA 9/10—Dpt. Procurement, City Hall Annex, grading, asphalt repaving, resurf. incl. reconstr. sewer; constr. storm sewer. CD 11/8.

Pa., Phila.—BA 9/10—Dpt. Procurement, City Hall Annex, Bid 2374, hydraulic dredging Torresdale Filter Plant sedimentation basin; Bid 2375, cleaning and cement mortar lining c.i. water mains (under 12 in.) various sections of city; Bid 2376, disconnecting water service from service mains in distr. sys. various sections of city; Bid 2377, water main in Wharton St. (south side) from 35th St. to Warfield St.; Bid 2378, sealing of expansion joints in exist. north 11 ft. diam. concrete outlet conduit and appurtenant work, Queen Lane Filter Plant, for Water Dpt. Plans deposit $10. Bid 2378. CD 11/8.

Pa., Phila.—AUTO PARKING LOT, etc.—BA 9/11—Dpt. Procurement, City Hall Annex, Bid 4233, general constr., Bid 4234, electrical work for auto parking lot and attendant's booth, 4850 N. Broad St., for Dpt. Pub. Property. Plans deposit $10. CD 3/13/57.

Pa., Phila.—MUSEUM OF ART—BA 9/11—Dpt. Procurement, City Hall Annex, Bid 5511, general constr., Part 1; Bid 5512, electrical work, Part II, Section 5 of Phila. Museum of Art alterations, addns. for Fairmount Park Comn. Plans deposit $20.

▲† **D. C., Wash.**—BA On Or About 12/15—U. S. Eng., First and Douglas Sts. N.W. (1) filter bldg. (2) chemical bldg. (b) utilities, storage tanks, chemical feed equipment (c) outside work Dalecarlia Filter Plant, 5900 MacArthur Blvd. N.W., CIVENG-49-080-60-1. Plans deposit $100. CD 3/11/55.

BUILDINGS—BA

N. Y., Flushing—CAFETERIA—BA 9/1—Bd. of Higher Education, Queens College Business Office, Bldg. H, Rm. 203, 65-30 Kissena Blvd., Zone 67, Contr. 1, general contract, Contr. 2, plumbing, Contr. 3, heating and ventilating, Contr. 4, electrical, Contr. 5, kitchen equipment for Cafeteria, Queens College. Plans deposit $20 each. Extended date. CD 7/29.

N. Y., West Hempstead—SCHOOL—BA 9/3—Bd. Educ. Union Federated School Dist. No. 27, Town of Hempstead, West Hempstead High School, Nassau Blvd., Chestnut St. elementary school alterations. Plans deposit $25. Reginald E. Marsh, Howard C. Snyder & Assocs., 101 Park Ave., New York 17, N. Y., archts.

▲† **N. Y., Brookhaven**—NUCLEAR ENGINEERING BLDG.—BA On Or About 9/29—U. S. Atomic Energy Comn., Brookahven Area, Engineering and Constr. Branch, Bldg. 464, 53 Bell Ave., Brookhaven National Laboratory, Upton, Proj. DO-E-1, Contr. 3, general contract, plumbing, heating and ventilating, electrical and associated outside utilities, nuclear engineering bldg., Brookhaven National Laboratory, Upton. Plans deposit $35. Seelye, Stevenson, Value & Knecht, 101 Park Ave., New York, N. Y., archts.-engrs. CD 10/26/55.

BUILDINGS—SLC

▲ **Pa., Pittsburgh**—ACTIVITIES CENTER—Carnegie Institute of Technology, Schenley Park, Pittsburgh, Zone 13, soon lets contract 82,000 sq. ft., brick, glass, aluminum, semi-split level, rein.-con. activities center $2,300,000. Lawrie & Green, 321 N. Front St., Harrisburg, archts. Gatter & Diehl, 1617 N. Front St., Harrisburg, engrs. CD 4/23.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton.
Franklin Contg. Co., U.S. Hy. 46, Little Falls, N. J., CA **$7,367,147**, constr. 1.8 mi. section Rte. 21 Freeway, Nutley and Clifton, Essex and Passaic Counties. Bids July 15. CD 7/28, under LB.

BUILDINGS—LB & CA

▲ **Standard Constr. Co.**, 1000 Connecticut Ave. N.W., Wash., D. C., CA Est.: over **$3,000,000**, 12 story, 100,000 sq. ft. HEADQUARTERS BLDG., H St. N.W. between 18 and 19 Sts., WASH., D. C. Federal Bar Assn, 1737 H St. N.W., Wash., D. C. Corning & Moore, 1302 16 St. N.W., Wash., D. C., archts.

Fluor Corp., 2500 S. Atlantic Blvd., Los Angeles 22, Calif. CA est. **$800,000**, activated CARBON PLANT addn. Neville Island, PITTSBURGH, PA. Pittsburgh Coke & Chemical Corp., Grant Bldg., Pittsburgh, Pa. Singmaster & Breyer, Inc., 420 Lexington Ave., New York, N. Y., engr.

SOUTH

HEAVY CONSTRUCTION—LB & CA

† **Va., Dam Neck**—RECREATION ROOM—BA 9/15—Dist. P. Wks. Office, 5th Naval Dist., Room 307, Bldg. N-26, U. S. Naval Base, Norfolk, recreation rooms addn., Fleet Air Defense Training Center, Dam Neck, Virginia Beach, NBy 20553, Spec. 20553/59. $25,000-$100,000. CD 9/10/58.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000, other public works $88,000, industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of Interest to American contractors.

By Regions & Classes of Construction
(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	**Middle West**
Middle Atlantic	**Mississippi to Rockies**
South	**Far West**

PROPOSED WORK

Water Supply	**Public Buildings**
Sewers, Waste Disposal	**Mass Housing**
Bridges	**Commercial Buildings**
Streets & Roads	**Industrial Buildings**
Earthwork, Waterways	**Unclassified**

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.

† **Tenn., Memphis**—ROAD REPAIRS, etc.—BA 9/16—Dist. P. Wks. Office, Bldg. 13, U. S. Naval Base, Charleston, S. C., repairs to existing roads, streets and parking lots, U. S. Naval Air Station, NBy 27532, Spec. 27532/59. $100,000-$250,000.

† **Mississippi**—BA 9/18—Soil Conservation Service, Dpt. Agriculture, New Albany, 4 earth fill floodwater retarding dams at Sites LT-la-3; LT-la-4; LT-la-5; and LT-la-6&7, Greasy Creek, Tate Co., Little Tallahatchie River Watershed, for U. S. Dpt. of Agriculture, Soil Conservation Service, P.O. Box 610, Milmer Bldg., Jackson, Miss. Report No. MS-6.

HEAVY CONSTRUCTION—LB & CA

▲ **ALABAMA**—State Hy. Dpt., Montgomery.
Foster & Creighten Co., American National Bank Bldg., Nashville, Tenn., CA **$1,722,382**, base and concrete pavement 6.205 mi. Interstate Rte. 65 from Mariot Creek No. to Ala. Hy. 691, Cullman Co. Bids July 17. CD 7/27, under LB.

▲ **LOUISIANA** — Dpt. Hys., Rm. 426, Headquarters Admin. Bldg., Baton Rouge, Bids opened 8/19.
R. B. Tyler Co., 2550 Poydras, New Orleans, La., LB **$3,445,470**, grading, shell and sand base course 9.577 mi. Calumet-Berwick Hy., Rte. LA-US 90, SP No. 4-08-11, FAP No. Y-121(2), St. Mary Parish. CD 8/5.

▲ **LOUISIANA**—State Dpt. Hys., State Office Bldg., Baton Rouge.
Hall & Holland, Box 38, Montgomery, La., CA **$2,674,647**, grading, drainage structures, bridge and overpass structures 8.719 mi. Egan-Crowley Hy., Rte. 11-10, SP No. 450-04-08, FAP No. I-10-2(4)71, Acadia Parish. Bids July 22. CD 7/27, under LB.

BUILDINGS—LB & CA

▲ **Sharpe & Hamaker, Inc.**, 3248 Wilson Blvd., Arlington, Va., LB **$1,167,000**, 6 story, 91-unit APARTMENT HOUSE between Park and Great Falls Sts., FALLS CHURCH, VA. Lester A. Sorenson, 4701 34th St. N., Arlington, Va. John M. Walton, Assoc., 2049 15th St. N., Arlington, Va., archts. CD 2/17.

▲ **J. A. Jones Constr. Co.**, 133 Ellis St. N.E., Atlanta, Ga., CA **$1,639,500**, men's DORMITORIES, Georgia Institute of Technology, ATLANTA, GA. University System Bldg. Auth., 244 Washington St. S.W., Atlanta, Ga. Bids Aug. 20. CD 7/13.

▲ **H. L. Coble**, 1705 Battleground Ave., Greensboro, N. C., LB **$5,320,000** (10 bidders), 598 low rent HOUSING UNITS, Ala. 125-1, 125-2, BESSEMER, ALA. Bessemer Housing Auth., 207 N. 17 St., Bessemer, Ala. Bids Aug. 19. CD 7/30.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

Mich., Detroit—BA 9/15—At office M. F. Wagnitz, city engr., 528 City-County Bldg., Zone 26, Contr. PW-3043, replacement northwest sanitary interceptor sewer, City of Dearborn. Plans deposit $25. CD 2/24.

† **WISCONSIN**—BA 9/15—Bureau Indian Affairs, Dpt. Interior, 2908 Colfax Ave., South, Minneapolis 8, Minn.
Shawano Co.—bit. surf. 31.8 mi. involving six separate roads on Menominee Reservation, Shawano and Oconto Counties, and incl. surf. streets in villages of Kesnena and Neopit, Proj. No. 152-516.

Wis., Sharon—BA 9/22—Village, Village Hall, 26,942 ft. sanitary sewers and sewage treatment plant. Plans deposit $25 for sewers, and $25 for plant. Jensen & Johnson, 23 Court St., Elkhorn, engrs. CD 5/6.

† **Illinois**—BA 9/30—U. S. Eng., 420 Locust St., St. Louis 2, Mo., road surf. on levees Clear Creek Drainage and Levee Dist., Proj. Item VI-H Union and Alexander Counties, CIVENG-23-065-60-9. CD 9/23.

BUILDINGS—BA

Wis., Menomonee Falls—FACTORY—BA 9/10—Best Block Co., 3522 N. Fratney St., Milwaukee, 1 story, 127x172 ft., concrete, steel, brick, blocks factory. Chas. W. Yoder & Assocs., 3505 W. Center St., Milwaukee, engrs.

Wis., Madison—LIBRARY—BA 9/22—University of Wisconsin, 4 story, bsmnt., 50x120 ft., rein.-conc., steel, brick and stone Law School library addn. $700,000. Plans deposit $50. CD 2/14/57.

HEAVY CONSTRUCTION—LB & CA

▲ **ILLINOIS**—Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldgs., Springfield.
Gust K. Newberg Co., 2040 N. Ashland, Chicago, Ill. CA **$4,319,722**, paving 3.19 mi. FAI-55 from Ill. 83 to Tri-State Tollway at Hinsdale, Cook and DuPage Counties. Bids July 24, awarded Aug. 8. CD 7/28, under LB.

▲ **Bethlehem Steel Co.**, 701 E. 3rd St., Bethlehem, Pa. LB **$5,681,342**, est. $6,386,000, No. 80.77-59-7, steel superstructure Damen Ave. viaduct, 37th to 47th Sts., CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago 2, Ill. Bids Aug. 14. CD 9/25/57.

GALLERY NO. 2 OF

VALUED CLIENTS

MACK TRUCK COMPANY, Plainfield, New Jersey
General Contractor: Wigton-Abbott Corporation
Architect & Engineer: Wigton-Abbott Corporation

In the waning era of gaslights and horse-drawn dreys, Lord Electric Company was already a major factor in the electrification of America. Today, as then, we are proud of the caliber of our clients throughout the land. Here are several more of Lord's thousands of important electrical installations.

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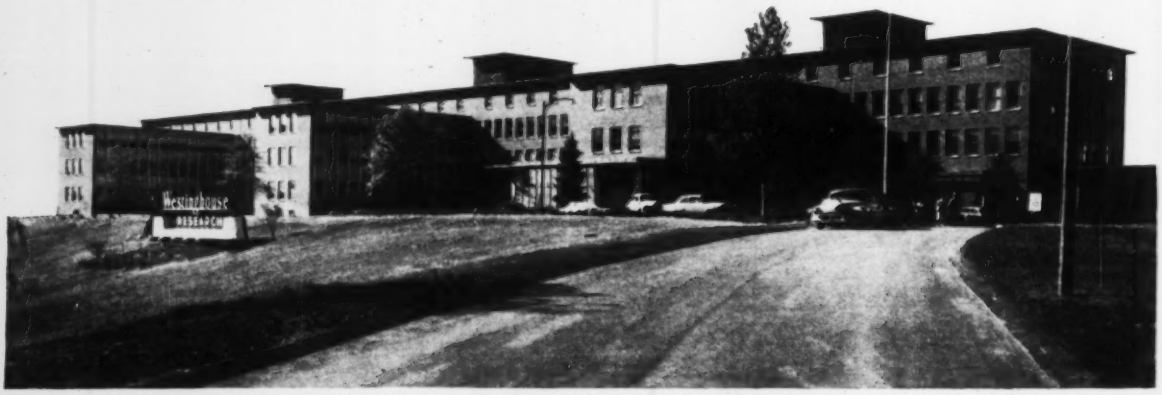
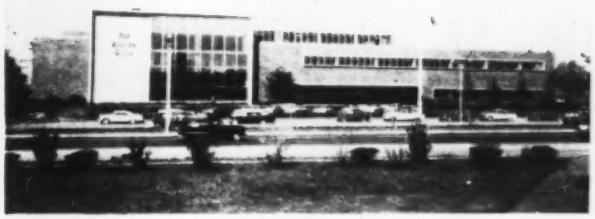
WESTINGHOUSE RESEARCH LABORATORY, Churchill Boro, Pennsylvania
General Contractor: Starrett Brothers & Eken, Inc.
Architect & Engineer: Voorhees, Walker, Smith, Smith & Haines



U.S. RUBBER COMPANY BUILDING ADDITION.
New York City, New York
Owner Firm: Rockefeller Center Inc.
General Contractor: George A. Fuller Company
Architect: Harrison & Abramovitz
Engineer: Syska & Hennessy, Inc.



BOSTON GLOBE NEWSPAPER COMPANY.
Boston, Massachusetts
General Contractor: Turner Construction Company
Architect & Engineer: Ganteaume & McMullen

JOHNS-MANVILLE CORPORATION, Klamath Falls, Oregon
General Contractor: George A. Fuller Company
Architect & Engineer: Skidmore, Owings & Merrill

LORD ELECTRIC COMPANY, INC.

BOSTON NEW YORK PITTSBURGH PORTLAND, ORE. RICHLAND, WASH.

BUILDINGS—LB & CA

▲ **Murphy Bros., Inc.**, 7945 Hamilton Ave., Cincinnati, O. Own Forces, $1,260,000, Second Section—130 HOMES, Plainfield-Glendale Milford Rd., CINCINNATI, O. Ayers & Graf, 520 Linton St., Cincinnati, O., engrs. CD 2/19.

▲ **George A. Fuller Co.**, 111 W. Washington St., Chicago, Ill. CA est. $1,000,000, 1 story, 160,000 sq. ft. WAREHOUSE, Kemper Rd., CINCINNATI, O. Sperry & Hutchinson Co., Fifth Ave., New York, N. Y. A. Epstein & Sons, Inc., 2011 Pershing, Chicago, Ill., engr. Awarded Aug. 17.

▲ **Kuhne-Simmons Co., Inc.**, 1064½ S. Neil St., Champaign, Ill., LB $3,527,000, three HOUSING UNITS, FOOD SERVICE BLDG., southeast parade ground area, University of Illinois, URBANA, ILL. University of Illinois, State Office Bldg., Springfield, Ill. Bids July 28. CD 1/23/58;
Tunicliff-McDonald Constr. Co., 3429 Miller St., Davenport, Iowa, LB $1,980,000, 1st stage, two HOUSING UNITS, University of Illinois campus (Urbana, Ill.);
Felmley-Dickerson Co., 1008 N. Goodwin St., Urbana, Ill., LB $1,320,000, 2nd stage, HOUSING UNIT and FOOD SERVICE BLDG., University of Illinois campus (Urbana, Ill.).

▲ **Jos Skilken & Co.**, 383 S. Third St., Columbus, O., Ca est. $7,000,000, general contract, 1 and 2 story, brick and block SHOPPING CENTER, MISHAWAKA, IND. McKinley Town & Country Shopping Center, 42 S. 4 St., Columbus, O. C. Melvin Frank Lindberg & Maki, 1650 W. 5 St., Columbus, O., archts.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

† **COLORADO**—BA 9/10—Bureau P. Rds., Dpt. Commerce, Denver Federal Center, Denver, Zone 25,
Mesa and Delta Counties—base, surf. 15.4 mi. highway IFB Colorado 1-0367-01.

† **WYOMING**—BA 9/10—Bureau P. Rds., Room 242, Bldg. 40, Denver Federal Center, Denver, Colo.,
Big Horn Co.—6.785 mi. Shell Canyon Hy., Forest Hy. Proj. 18-F2, G1, H1, Greybull, $200,000.

† **Minnesota**—BA 9/10—Contracting Officer, U. S. Forest Service, 710 N. Sixth St., Milwaukee, Zone 3, Wis.,
St. Louis Co.—reconstr. 2.2 mi. Skibo Rd. No. 120, Superior National Forest. IFB 16-60-1.

† **Ark., Little Rock**—BA 9/15—U. S. Eng., P. O. Box 867, Little Rock, additional storm drainage displacement, Little Rock Air Force Base, ENG-03-050-60-10. CD 8/24.

Iowa, Earlham—BA 9/15—Town, Town Hall, ww sys. imprvs., (A) iron removal plant and interconnecting piping, etc.; (B) 205,600 gal. rein.-conc. storage reservoir, 300 GPM pump and motor, piping, remodel pumping station. Plans deposit $20. Charles Mower & Assocs., Corning, engrs.

† **Ark., Little Rock**—BA About 9/15—U. S. Eng., P. O. Box 867, Little Rock, addnl. storm drainage displacement, Item No. 99-004-(871-183), Little Rock Air Force Base, ENG-03-050-60-10. CD 9/9/58.

† **WYOMING**—BA 9/15—Bureau P. Rds., Room 242, Bldg. 40, Denver Federal Center, Denver, Colo.,
Lincoln Co.—2.064 mi. Snake River Canyon, Forest Hy. Proj. 6-H, Alpine, Approx. $240,000.

Colo., Colorado Springs—BA 9/16—Dpt. Public Utilities 18 S. Nevada Ave., approx. 6,600 ft. 6 x 8 in. transcontinental water diversion tunnel, McCullough Alma, $500,000. CD 6/23.

† **North Dakota**—BA 9/16—U. S. Eng., 1217 U. S. Post Office and Custom House, St. Paul, Minn., resurf. access roads, Homme Reservoir near Park River, Civeng 21-018-60-7. CD 8/21.

† **Mo., Fort Leonard Wood**—SEWAGE TREATMENT PLANT, etc.—BA 9/22—U. S. Eng., 1800 Federal Office Bldg., Kansas City, Zone 6, Mo. sewage treatment plant addn., primary electrical facilities. IFB 60-7. CD 8/18.

† **Tex., Amarillo**—AIR CONDITIONING—BA 9/22—General Services Admin., Design & Constr. Div. Room 101, 1114 Commerce St., Dallas, Zone 2, air conditioning, U. S. Post Office and Courthouse (Old) Taylor St. at 7th St., Proj. 01299. Plans deposit $25.

† **N. M., Las Cruces**—AUTO MAINTENANCE SHOP—BA about 9/24—U. S. Eng., P. O. Box 1538, Albuquerque, approx. 32 x 84 ft., masonry auto maintenance shop, Las Cruces Air Force Base, ENG-29-005-60-23. CD 8/5 under LB.

† **N. M., Roswell**—SERVICE CLUB—BA about 9/25—U. S. Eng., P. O. Box 1538, Albuquerque, 2 story, approx. 129 x 203 ft., masonry, T-shape service club, Walker Air Force Base, ENG-29-005-60-19. CD 9/9/58.

† **Wyoming**—BA 9/29—Bureau Reclamation, Dpt. Interior, Cody, relocating 5 mi. 34.5 kv Shoshone-Cody Nos. 1 and 2 transmission lines; 69 kv Shoshone-Thermopolis transmission line; and aerial control cable in Shoshone canyon, Shoshone Proj., Spec. DC 5259.

† **Idaho**—BA 9/10—Bureau Reclamation, Office of Central Snake Projs., Fairgrounds, Boise, b. conc. resurf. crest roadway, Arrowrock Dam, Arrowrock Div., Boise Proj., Boise and Elmore Counties, Specs No. 100C-381. CD 8/4 under LB.

HEAVY CONSTRUCTION—LB & CA

▲ **Williams Bros.**, National Bank Bldg., Tulsa, Okla., CA est. about $13,000,000, about 85 mi. 24 in. natural gas pipe line between Farmington and Pine City, MINNESOTA. Northern Natural Gas Co., 2223 Dodge St., Omaha, Neb. CD 4/2/54 under Minnesota and Wisconsin.

R. H. Fulton, 2323 Erskine Rd., Lubbock, Tex., CA est. About $12,000,000, 85 mi. 20 in. natural gas pipe line between Pine City and Duluth, (Minnesota).

▲† **Taylor Wheless Co., Inc.**, Box 1341, Jackson, Miss., LB $1,728,175, auxiliary dam Greers Ferry Dam, Cleburne Co., CIVENG-03-050-60-3, ARKANSAS. U. S. Eng., Box 867, Little Rock, Ark. Bids Aug 18. CD 7/14.

▲† **American Elin Corp.**, 11 Broadway, New York, N. Y., LB $1,613,525, main generator Greers Ferry Dam, CIVENG-03-050-59-67, ARKANSAS. U. S. Eng., P. O. Box 867, Little Rock, Ark. Bids Aug. 20. CD 8/12.

▲† **Beacon Constr. Co.**, 100 Hano St., Boston, Mass., CA $1,809,209, Sched. 1, Nike Hercules Facilities, Lincoln Air Force Base, ENG-25-066-59-127, LINCOLN, NEB. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids June 25. CD 7/1, under LB.

BUILDINGS—LB & CA

▲ **Ricks-Maguire Development Corp.**, 1008 Harrison St., Amarillo, Tex. and 1330 N. Industrial Blvd., Dallas, Tex. Owner builds. $2,250,000. 2 story, bsmnt., masonry HOTEL, AMARILLO, TEX. CD 2/13/57.

▲ **Robert H. Smith Inc.**, 1915 Kolfahl St., Houston, Tex. LB $3,319,000, est. $5,662,000. (6 bidders), general constr. HOSPITAL, BEAUMONT, TEX. Sisters of Charity of Incarnate Word, c/o St. Elizabeths Hospital, N. W., Calder Ave. and 11th St., Beaumont, Tex. Bids Aug. 20. CD 8/4.

FAR WEST

HEAVY CONSTRUCTION—BA

Calif., San Luis Obispo—OUTDOOR PHYSICAL EDUCATION FACILITIES—BA 9/10—State Div. Architecture, 1100 S. Grand Ave., Los Angeles, outdoor physical education facilities, California State Polytechnic College. W.O. 4005GC-25. $255,000. Plans deposit $25. CD 6/17, under LB.

Calif., Oakland—BA 9/10—City, City Hall, sewers, road imprvs.; portion Chabot Park Estates and portion Durant Park Highlands Tr. $90,000. Plans deposit $5. CD 3/6/52.

NEVADA—BA 9/10—State Dpt. Hys., State Hy. Bldg., Carson City,
Lander Co.—portion secondary hy. sys. 0.766 mi. State Rte. 8A between 34 mi. north and 32.5 mi. north of junction with U. S. 50 near Austin. Proj. S 623 (7). Plans deposit $10. Edward L. Pine, hy. engr.

† **California**—BA 9/15—Bureau Reclamation, Dpt. Interior, Oak View, valve structures for pipe lines and modification steel intake manifolds at Ojai Valley, Upper Ojai and Rincon Pumping Plants, Ventura, Ventura Co., Ventura River Proj., Spec. DC 5231. CD 9/30.

Calif., Los Angeles—BA 9/15—Bd. Suprvs., Los Angeles County Hall of Records, 6 lane steel girder bridge, Imperial Hy. over North Fork of Coyote Creek, Santa Fe Springs.

† **Oregon**—BA 10/1—Bureau Reclamation, Dpt. Interior, Prineville, earthwork, structures and surf. relocation of Oregon Hy. No. 27, near Prineville Reservoir, Crook River Proj., DC 5232.

CALIFORNIA—BA 9/16—State Div. Hys., 1120 N St., Sacramento,
Alameda Co.—installing barriers in center dividing strip 6.8 mi. Nimitz Freeway, State Sign Rte. 17, between Washington Ave. in San Lorenzo and 0.2 mi. south High St., Oakland IV-Ala-69-C, Sln. Oak, $306,000.
San Mateo Co.—realignment around slide area and drainage facilities 0.9 mi. FAS County Rd. 620 (LaHonda Rd.) between 0.1 mi. north Spanish Ranch Creek and 0.1 mi. north Woodruff Creek, IV-S.M.-620. $257,000. CD 11/4/57.

CALIFORNIA—BA 9/17—State Div. Hys., 120 S. Spring St., Los Angeles,
Los Angeles Co.—pedestrian ramp at Florence Ave. overcrossing, Santa Ana Freeway, U. S. 101, Downey and Santa Fe Springs, VII-L.A.166, Dny.

CALIFORNIA—BA 9/17—State Div. Hys., 120 S. Spring St., Los Angeles,
San Diego Co.—storm drain between State Sign Rte. 94 near Grove St. and Imperial Ave., at Broadway in Lemon Grove, XI-S.D.-200-A. CD 12/4/57.

▲ **ARIZONA**—BA 9/18—State Hy. Comn., 206 S. 17 St., Phoenix,
Pinal Co.—select material, aggregate base, cement treated base, b. conc., emulsified asph. seal coat and 2 interchange structures beginning about ½ mi. southeast of Picacho on State Rte. 84 and extending southeasterly towards Tucson for 8.6 mi., I-10-4-(18) 214, Casa Grande-Tucson Highway, Item No. 198 AFE 8416, M. P. 197.86 to M. P. 206.50. $1,551,730.

BUILDINGS—BA

Calif., Petaluma—SCHOOL—BA 9/8—Petaluma School Dist., Admin. Bldg., 5th and B Sts., wood frame Grant Elementary School. $450,000. Plans deposit $50. Reynolds & Chamberlain, 3833 Piedmont Ave., Oakland, archts. CD 8/4.

Calif., Sacramento—COUNTY JAIL—BA 9/14—Sacramento County, 827-7th St., Branch County Jail $800,000. Plans deposit $20. Rickey & Brooks, 2015 J St., archts. CD 7/17.

Calif., San Francisco—GYMNASIUM—BA 9/22—State Div. Architecture, 1120 N St., Sacramento, 65,000 sq. ft. rein.-con. gymnasium addns., San Francisco State College, W.O.4005GC-51. $825,000. Plans deposit $25. CD 12/4.

▲ **Wash., Olympia**—SCHOOL—BA 9/23—School Dist. No. 1, 116 North Columbia St., 130,000 sq. ft., frame, steel, masonry high school. $1,500,000. Plans deposit $50. Naramore, Bain, Brady & Johanson, 904 7 Ave., Seattle, archts. CD 11/12.

HEAVY CONSTRUCTION—LB & CA

▲ **H. C. Smith Constr. Co. & Alvada, Inc.**, 900 Rowena Ave., Los Angeles, Calif., CA $2,809,183, Storm Drain Proj. No. 59, Unit No. 1, Central Business Dist. storm drain portion of Line A, Line 1 and portion Line H, LOS ANGELES, CALIF. Los Angeles County Flood Control Dist., 2250 Alcazar St., Los Angeles, Calif. Bids July 17. CD 7/23, under LB.

† **Johnson, Drake & Piper Inc.**, 4821 Tidewater Ave., Oakland 1, Calif. CA $667,410, FD radar facilities FPS 24/24, Point Arena Air Force Station, ENG-04-203-60-2. POINT ARENA, CALIF. U.S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids Aug. 6. CD 7/8.

▲ **Jurupa Community Services Dist.**, 8520 Donna Way, Riverside, Calif., rejected bids July 17, sewerage sys., pumping station, treatment plant, RIVERSIDE, CALIF. LB $1,445,328. CD 7/23, under LB.

Fredrickson Builders Supply & Constr. Co., 4760 S. Redwood Rd., Murray, Utah, CA PAINT AND PACKOUT BLDG. M-48, IFB 27503, BRIGHAM CITY, UTAH. Thiokol Chemical Corp., Utah Div., 64 North Main St., Brigham City, Utah. Bids Aug. 4. CD 7/31.

▲ **Christensen & Foster and R. J. Sommers Constr. Co.**, Santa Rosa, Calif., CA Est. $2,000,000, POWER PLANT to utilize steam from geysers from Big Sulphur Creek, concrete box culvert bridge across Big Sulphur Creek and access roads near Healdsburg, CALIFORNIA. Pacific Gas & Electric Co., 245 Market St., San Francisco, Calif. CD 7/30/58.

† **G. A. Grant, Inc.**, P.O. Box 756, Richland, Wash., CA $149,800, est. $160,000 (6 bidders), 1 story 37x44 ft. and 2 story, 13x37 ft., masonry PLUTONIUM RECOVERY FACILITY in 200-West area at Hanford Works, RICHLAND, WASH. Atomic Energy Comm., Hanford Operations Office, P.O. Box 550, Richland, Wash. Bids Aug. 18. CD 7/22.

▲ **Robert E. McKee General Contractor, Inc.**, 4700 San Fernando Rd. West, Los Angeles 39, Calif., LB $2,093,000 (6 bidders), general contract Phase II permanent facilities Chino YOUTH TRAINING SCHOOL, California Youth Auth., incl. greenhouse, auto and machine shop, shops bldg., chapel, automotive storage bldg., receiving warehouse, commissary addn., auditorium, housing unit, employees apartment bldg. with carports, W. O. 3514GC, CHINO, CALIF. State Div. Architecture, 1100 S. Grand Ave., Los Angeles, Calif. Bids Aug. 19. CD 7/10.

ARIZONA—State Hy. Comn., 206 S. 17 St., Phoenix,
Arizona Concrete Pipe Co., 1746 W. Fillmore, Phoenix, Ariz., CA $527,178, storm drain and widen portion of highway, Phoenix Interstate Freeway, Item 96, beginning just north of Buckeye Rd. on Freeway and extending N. for 2.5 mi. to ¼ mi. S. of Grand, Maricopa Co. Bids July 31, awarded Aug. 18. CD 8/4, under LB.

▲ **ARIZONA**—State Hy. Comn., S. 17 St., Phoenix,
Tanner Bros. Contg. Co., 731 N. 19 Ave., Phoenix, Ariz., CA $1,198,984, subgrade, seal S. M., aggregate base, bit. stab. base, emulsified ash. seal coat, Cordes Jct.-Flagstaff Hy., start 4 mi. N. Coconino-Yavapai County Line and extending N. over align SR 79 for 10½ mi. toward Flagstaff, Coconino Co. Bids Aug. 14, awarded Aug. 18. CD 8/19, under LB.

BUILDINGS—LB & CA

▲† **P. Kiewit Sons Co.**, 1300 Alpha St., Seattle Wash., LB $1,261,790, est. $1,212,404 (5 bidders), DORMITORY and MESS for Air Force Support Facility, Inv. 60-2, FORT GREELEY, ALASKA. U. S. Eng., P.O. Box 7002, Anchorage, Alaska. Bids Aug. 18. CD 7/31.

CANADA

BUILDINGS—BA

Ont., Hamilton—HOUSING—BA 9/17—Central Mortgage & Housing Corp., 650 Lawrence Ave. W. and Ontario Dpt. Planning & Development, Toronto, 91 units row housing, land south of Roxborough Park Survey. Over $500,000. Plans deposit $100. CD 12/8/53.

AMERICANS ABROAD

BUILDINGS—LB & CA

▲ **Kaiser Engineers, Div. of Henry J. Kaiser Co.**, 1924 Broadway, Oakland, Calif., U.S.A., CA Est. $30,000,000, design and construct 20,000 metric-ton ALUMINUM PRODUCTION PLANT, RIHAND, INDIA. Hindustan Aluminum Corp., (Kaiser Aluminum & Chemical Corp., Chicago, Ill., U.S.A. and G. D. Birla Interests of India), Rihand, Uttar Pradesh, India.

PROPOSED PROJECTS

WATER SUPPLY

Ind., Liberty—Town Bd., 250,000 gal. elevated storage tank; 8 in. supply line, 13,750 ft.; 8 and 12 in. c.i. pipe, $250,000. J. B. Wilson, 524 J-of-P Bldg., Indianapolis, consult. engr.

Ky., Camargo—Montgomery Co. Water Dist. No. 1, Camargo, dam, reservoir, treatment plant, elevated storage tank, distr. lines. $100,000. J. S. Kennoy, 3030 Windermere Dr., Lexington, Ky., consult. engr.

Minn., Little Falls—City, City Hall, 750,000 gal. water reservoir. $110,000. R. J. Ellison, 2066 Bayard Ave., St. Paul, engr.

Tex., Lake Worth—Village of Lake Worth, Lake Worth City Hall, 6720 Telephone Rd., Fort Worth, voted bonds Aug. 4, WW extens. $383,000. Joe J. Rady, 511 Insurance Bldg., Fort Worth, consult. engr.

Tex., Seminole—City, City Hall, 2 water supply wells $60,000, 2 storage tanks $60,000. C. A. Tubbs & Parkhill, Smith & Cooper, 201 Ave. R., Lubbock, consult. engrs.

B. C., Prince Rupert—City, City Hall, WW sys. expansion. $850,000. Associated Engineering Services Ltd., 2256 W. 12th Ave., Vancouver, consult. engrs. CD 11/30/51.

SEWERS, WASTE DISPOSAL

▲ **Alaska, Fairbanks**—City, City Hall, sanitary sewers. $1,148,550.

Conn., East Norwalk—City of Norwalk, City Hall, South Norwalk, municipal incinerator. $400,000. Bowe, Albertson & Assocs., 75 West St., New York, N. Y., consult. engrs. CD 12/1.

Conn., Southington—Town, Town Hall, interceptor sewer from new sewage disposal plant across S. End Rd. to Parkview. $150,000. Metcalf & Eddy, 1300 Statler Bldg., Boston, Mass., consult. engrs.

Ill., LaGrange—Village, Village Hall, voted bonds Aug. 15, sanitary sewers. $500,000.

Ind., Fort Wayne—Bd. P. Wks.; concrete storm sewers, laterals, surf. $500,000. Bids about 2 weeks. CD 7/24/46.

▲ **Ind., Wabash**—City, City Hall, sewage disposal plant and interceptor sewers, connecting lateral sewers, filter plant, lift station. $1,000,000. Bids in October. Henry Steeg & Assoc., 3338 N. Illinois St., Indianapolis, consult. engrs. CD 8/23/51.

La., Shreveport—Owners, c/o Morey & Burns, archts. planners; Simons Bldg., sanitary sewers $100,000, storm sewers $95,000, 833 acres bought for development.

Mo., Steele—City, City Hall, sewerage sys. exten., imprvs. $296,000.

Mont., Laurel—City, City Hall, sanitary sewerage sys. imprvs. $355,000. Constr. 1960.

N. Y., Bainbridge—Village, Village Hall, sanitary sewerage sys. and treatment plant. $358,000.

N. Y., Camden—Village, Village Hall, sewage treatment plant remodeling. $100,000.

N. Y., Champlain—Village, Village Hall, sanitary sewerage sys. and treatment plant. $400,000.

N. Y., Phoenix—Village, Village Hall, sewage treatment plant and sanitary sewer extensions. $400,000.

N. Y., Syracuse—Onondaga P. Wks. Comm., trunk sewer between Kinne St. and Stillwell Circle. $234,000.

▲ **N. C., Raleigh**—City, City Hall, voted $1,357,800 bonds Aug. 11, sanitary sewerage system imprvs., enlargement. CD 7/27.

Tex., Irving—City, City Hall, voted bonds Aug. 8 area drainage. $200,000. CD 7/31.

Tex., Lake Worth—Village of Lake Worth, Lake Worth City Hall, 6720 Telephone Rd., Fort Worth, voted bonds Aug. 4, sewerage sys. and treatment plant. $817,000. Joe J. Rady, 511 Insurance Bldg., Fort Worth, consult. engrs.

Tex., Rowlett—City, City Hall, sewage disposal sys. $108,000. Wisenbaker, Fix & Assocs., Peoples Bank Bldg., Tyler, consult. engrs.

Tex., San Antonio—City, City Hall, underground box storm sewer drainage, Hot Wells Blvd. to S. New Braunfels Ave. $195,531. Gulliatt, Lodal & Suttenfuss, Inc., 1411 Transit Tower Bldg., consult. engrs. CD 9/19/52.

▲ **Wash., East Wenatchee**—East Wenatchee Sewer Dist., $150,000 bond election Sept. 15; sewage sys. $1,770,000. Gray & Osborne, 228 S. 2 St., Yakima, consult. engrs. CD 6/9.

▲ **Wash., Spokane**—City, City Hall, imprv. intercepting sewerage sys. $3,000,000. CD 12/7/56.

Wis., Brookfield—City, City Hall, sanitary sewers and sewage treatment plant for Northwest District. $300,000. Reukert & Mielke, 420 Frederick St., Waukesha, consult. engrs. F. Robinson, c/o owner., engr.

BRIDGES

Ill., Ottawa—LaSalle Co. Hy. Dpt., bridge over Fox River, Wedron. $240,000. Bids in 1959. CD 1/20/55.

Mo., Joplin—City, City Hall, rehabilitation of Broadway viaduct. $152,800. Allgeier, Martin & Assoc., 1204 Main St. and Box 0, Station A, Joplin, Mo., consult. engrs. Preliminary report by engineers made.

O., Ashtabula—Comrs. Ashtabula Co. Courthouse, bond election Nov. 3, bridge imprvt. program, $1,500,000.

STREETS AND ROADS

Conn., Newington—Town, Town Hall, rebuild 17 town highways, $138,432.

▲ **HAWAII**—Dpt. Public Rds., 721 Keliko, Honolulu, **Island of Hawaii**—3.2 mi. 2 lanes Hawaii Belt Rd. Keauhou to Holualoa, Proj. BF 018-1(1), $665,000. 5.9 mi. 2 lanes Hawaii Belt Rd., Palani Junction to Holualoa, Proj. BF-081-1(2), $1,300,000. 3.1 mi. 2 lanes Hawaii Belt Rd., Naalehu to Honuapo, Proj. BF 011-2(1), $612,000. 12 mi. 2 lanes Kamuela-Kawaihae Rd., Proj. S-0260, $1,300,000. **Island of Maui**—1.8 mi. 2 lanes Hana Belt Rd., Maliko Section, Proj. F 036-1(1), $818,060. 8 mi. 2 lanes Lower Kula Rd.-Pukalani Jct., Proj. No. BF 037-(1), $2,580,000. 0.9 mi. 2 lanes Hana Belt Rd.-Kakipi Gulch, Proj. F-036-1(3), $586,000.

▲ **INDIANA**—State Hy. Comn., Indianapolis, 5.5 mi. sect. road between Indianapolis and Fort Wayne, incl. 4 bridges and 2 interchanges, $4,000,000. Swindell-Dressler Corp., P.O. Box 1888, Aspinwall, Pa., consult. engrs.

La., Shreveport—Owners, c/o Morey & Burns, archts. planners, Simons Bldg., streets, 833-acres bought for development. $110,000.

MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

Tyngsboro—Section II Hy., Westford Rd. to New Hampshire State Line. Over $200,000. Universal Engineering Corp., 150 Tremont St., Boston, engrs. Constr. 1959. CD 6/26/57.

NEW YORK—State Dpt. P. Wks., State Office Bldg., Albany, Zone 1,

Allegany Co.—reconstr. approx. 2½ mi. Rte. 408 in and near village of Cuba and constr. 38 ft. rein.-con. Rte. 408 bridge over Oil Creek near west village line, FAI Proj. $800,000.

NEW YORK—State Dpt. P. Wks., State Office Bldg., Albany, Zone 1,

Jefferson Co.—reconstr. approx. 3.5 mi. Rte. 11 near Evans Mills, FAI Proj. $600,000.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany, Zone 1,

Steuben Co.—wid'n., reconstr. Rte. 15 from 1 mi. north Rte. 17 intersection, Painted Post northward for 5.8 mi. to point just south Rte. 333 intersection near Campbell, FAI Proj. $1,000,000.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany, Zone 1,

Westchester Co.—reconstr. and relocation 2½ mi. Rte. 22 and 1 mi. Rte. 120, FAI Proj. $1,000,000.

▲ **N. C., Raleigh**—City, City Hall, voted $1,500,000 bonds Aug. 11, constructing and reconstructing city streets. CD 7/17.

Okla., Oklahoma City—City, City Hall, will not widen and resurface N.W. 23 St. from Robinson to Portland Ave. $425,000. Project abandoned. CD 8/7.

Tex., Corpus Christi—City, City Hall; Agnes-Laredo Sts. Extens., Stanley to Tancahua St. $175,000. Lockwood & Andrews & Newman, 103 N. Liberty St., Victoria, consult. engrs. CD 3/30/55.

▲ **Tex., Irving**—City, City Hall, voted bonds Aug. 8, Proposal 1, street imprvs. (paving, drainage) $2,500,000. CD 7/31.

EARTHWORK, WATERWAYS

▲ **Connecticut**—State P. Wks. Dpt., 165 Capitol Ave., Hartford, flood control, Naugatuck River, dike for underpass at Mill St.; dikes on east and west banks of river, Pump house, Derby. $1,462,000.

Connecticut—State P. Wks. Dpt., 165 Capitol Ave., Hartford, flood control, Hall Meadow Brook, Thomaston, $325,000. CD 8/18.

Conn., Saugatuck—Town of Westport, Town Hall, Westport, roads and facilities for new Town Beach and Park, Saugatuck Shores, $300,000; fill to develop new Town Beach, Saugatuck Shores, $250,000.

Indiana—Martin County Soil Conservation Dist., Shoals, 2 earthen dams, Boggs Creek Watershed Proj., Crane Naval Ammunitions Depot. $350,000.

† **Minnesota**—U. S. Eng., 1217 U.S. Post Office & Custom House, St. Paul, Zone 1, steel cut-off wall between two lock chambers to permit operation of locks independently, Ford Dam, Mississippi River, Minneapolis. $375,000. Bids next October.

Tex., Beaumont—Terminal Bldg. Corp., c/o GC&SFR Co. & Kirby Lumber Co., Calder St. area site earthwork, grading, etc. $75,000; water sys. $60,000; Industrial Subdivision North Beaumont.

Tex., Bowie—Texaco Inc., Melrose Bldg., Houston, water injection and earthen entrance for oil recovery in Bowie Field, near here. $150,000.

▲ **Tex., Galveston**—Galveston County, Courthouse, bond election Sept. 26, Galveston Seawall exten., and seawall, Texas City. $2,500,000. CD 6/5.

Tex., Sherman—Magnolia Petroleum Co., Magnolia Bldg., Dallas, earth water injection proj. in Pennsylvania Field, near here. $200,000.

AIRPORTS

▲† **Calif., Lemoore**—HANGAR, etc.—Dist. P. Wks. Office 12th Naval Dist., Room C112, San Bruno, hangar, aircraft maintenance facilities, Lemoore Naval Air Station. $4,500,000. Lemoore Engineers, 595 Mission St., San Francisco, consult. engrs. CD 4/10/58.

† **Calif., Lemoore**—ROADS AND WALKS—Dist. P. Wks. Office, 12th Naval Dist., San Bruno, roads and walks, Lemoore Naval Air Station. $200,000. Tudor Eng. Co., 595 Mission St., and Keller & Gannon, 126 Post St., both San Francisco, consult. engrs.

▲† **Ga., Brunswick**—HOUSING—Sixth Naval Dist., Bldg. No. 13, U.S. Naval Base, Charleston, S. C., Capehart Housing, Naval Air Station, Glynco, $1,000,000. Abreu & Robeson, Inc., 141 Walton St., Atlanta, Zone 3, archt.-consult. engr.

Ind., Fort Wayne—HANGAR—Bd. Aviation, City Hall, 1 story, masonry steel, rein.-con. hangar, Baer Field Airport. $500,000. Wm. A. Darling, Transfer Bldg., consult. engr. CD 5/1/58.

▲ **N. Y., Idlewild**—RUNWAY EXTENSION—Port of New York Authority, 111 8th Ave., New York, Zone 11, 3,350 ft. easterly end Runway 13 R-31 L extension, New York International Airport. $1,250,000.

O., Akron—LIGHTING SYSTEM—Comrs. Stark & Summit Co., Court House, lighting sys., high intensity runway lighting, Akron-Canton Airport. $180,000; airport terminal apron, $250,000. CD 7/31/57.

LATIN AMERICA

▲ **Mexico, Monterrey**—PLANT—Celulosa y Derivados, et al, Monterrey, nylon plant. $2,000,000.

AMERICANS ABROAD

▲† **Liberia, Monrovia**—RADIO RELAY STATION—U. S. Information Agency, 1776 Pennsylvania Ave. N.W., Wash. 25, D. C., U.S.A., radio relay station for Voice of America, $10,000,000.

PUBLIC BUILDINGS

Alaska, Ketchikan—SCHOOL—School Bd., Ketchikan, plans by L. A. Forrest, 622 Hemlock Way, Juneau, elementary school, Tongass View area. $990,000. CD 6/16.

▲ **Ariz., Tucson**—PHYSICS-MATHEMATICS, LAW BLDGS.—University of Arizona, Campus, plans by Friedman & Jobusch, 2233 E. Broadway, 5 story, 59,000 sq. ft. rein. con. brick physics-mathematics bldg. on University of Arizona campus, south side of East 4 St. between Park and Mountain Aves., $1,350,000. Bids in October; plans by Arthur T. Brown, 726 N. Country Club Rd., 6 story, 39,000 sq. ft. brick law bldg. on University of Arizona campus at S.E. corner of Park Ave. and E. 4 St., $871,000. Bids in October. CD 4/2/57.

Colo., Denver—HEADQUARTERS—State of Colorado, State Game & Fish Comm., 1530 Sherman, plans by Paul W. Rader, 6915 Lakewood Place, 5 story headquarters with underground parking. $700,000-$1,500,000.

▲ **Colo., Rangely**—TECHNICAL COLLEGE—School Dist. No. 4 plans by Caudill, Rowlett, Scott & Assocs., 150 Classen Blvd., Oklahoma City, Okla., technical college (branch of Mesa College), incl. dormitories, classroom, technical shops. $3,000,000.

▲ **Colo., Wheat Ridge**—TRAINING SCHOOL—State of Colorado St. Home and Training School, plans by Orrie J. Holmen, 4485 Wadsworth Ave., State Training School expansion, incl. 500-bed dormitory, kitchen and dining facilities, academic and crafts bldg. $2,500,000. Wheeler & Lewis, 2215 W. 32 Ave., Denver, consult. engrs.

Conn., Norwich—SCHOOLS—Town Bd. Educ., City Hall, bond election Nov. 3, Junior High School, Ox Hill Rd., $450,000; bond election Nov. 3, Occum Elementary School, Merchants Ave. $400,000. CD 5/11.

Conn., Plainfield—SCHOOLS—Town, Town Hall, voters approved $995,000 appropriation at referendum Aug. 10, high school. Plainfield voters rejected at referendum Aug. 10, elementary school for Central Village, Moosup and Plainfield, Moosup, $493,000. Chandler & Palmer, 114 Thayer Bldg., Norwich, archts. CD 5/15.

▲ **Del., Harrington**—SCHOOL—Harrington Special School Dist., plans by Buchart Engineering Corp., 611 W. Market St., York, Pa., high school. $1,000,000.

▲ **Del., Stanton**—SCHOOL—Stanton Del. School Dist. plans by Whiteside Moeckel & Carbonell, 9 and Market Sts., Wilmington, Junior High School addn. $1,000,000. Bids soon.

Ind., Gary—SCHOOL—School City of Gary, 1 story, 55,000 sq. ft., steel joists, rein.-con. elementary school, $800,000. Raymond S. Kastendiek, 675 Broadway, consult. engr. CD 9/2/58.

Ind., Logansport—ACTIVITY THERAPY—State Div. P. Wks. & Supply, State House, Indianapolis, plans by Yaeger Archts., 822 Ohio St., Terre Haute, activity therapy bldg. $620,000. CD 8/30/56.

Ind., Michigan City—STATE PRISON CELL BLOCK—State of Indiana Div. P. Supply, State House, Indianapolis, plans by L. Crosby Bernard & Co., 2044 164 Place, Hammond, 3 story, 52 & 200 ft. steel skel-rein. con. State Prison Cell Block alterations. $800,000. CD 3/6/57.

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Iowa, Northwood — SCHOOL — Bd. Educ., Northwood-Kensett Community School Dist., plans by Karl Keffer Assocs., 202 Masonic Temple Bldg., Des Moines, high school, remodeling high school. $645,000.

Kan., Colony—SCHOOLS—Rural High School Dist. 5 of Anderson Co. and Common School Dist. 64 of Allen and Anderson Counties, plans by Robison & Hissem, 830 N. Main St., Wichita, grade and high school. $450,000.

Ky., Williamsburg—HOUSING—City, City Hall, plans by Morton & Sweetson, archts.-engrs., 203 Journal Bldg., 518 S. Gay St., Knoxville, Tenn., 200 unit low rent housing. Over $700,000.

▲ Minn., International Falls — SCHOOL — Bd. Educ., $1,800,000 bond election Oct. 6, high school, Melander, Fugelso & Assocs., 603 Alworth Bldg., Duluth, archts. CD 2/16.

▲† Miss., Meridian—HOUSING—Dpt. P. Wks., Sixth Naval Dist., Bldg. No. 13, U. S. Naval Base, Charleston, S. C., plans by Lacy and Stahnke and James T. Canizaro, archts.-engrs., P.O. Box 229, Capehart Housing, Naval Auxiliary Air Station. $1,000,000. CD 9/8, under Airports.

N. H., Milford—SCHOOL—Milford School Dist., plans by Alfred T. Granger Assoc., Granger Circle, Hanover, high school. $400,000. Constr. late 1959.

▲ N. J., Mount Holly—SCHOOL—Bd. Educ., bond election Sept. 22, Junior High School. $1,409,750. Micklewright & Mountford, 90 E. Stevvesant St., Trenton, archts.-consult. engrs. CD 4/3.

† N. D., Grand Forks — STATION — General Services Admin., 18th & F Sts. N.W., Wash., D. C., plans by Wells & Denbrook, 1701 Cherry St., Immigration and Naturalization Service Station. $312,000.

▲ Okla., Shawnee — HOSPITAL — Pottawatomie Co., Courthouse, plans by Hugh W. Brown, Shawnee, county hospital. $1,000,000.

▲† Tenn., Oak Ridge—DEMONSTRATION REACTOR—Atomic Energy Comn., P.O. Box E, plans by Allis-Chalmers Mfg. Co., Wyatt Bldg., Wash., D. C., EGCR 85,000 thermal kw. combined experiment and power demonstration reactor, Gallager Bend, Clinch River 5 mi. south of here. $30,000,000. Kaiser Engineers, Div. H. J. Kaiser Co., 1924 Broadway, Oakland, Calif., consult. engrs.

Tex., Ballinger—HOSPITAL—Ballinger Memorial Hospital Inc., hospital. $450,000.

Tex., Carthage—HOSPITAL—Panola General Hospital, Panola County, hospital addns. $450,000.

▲ Tex., Galveston—COUNTY JAIL—Galveston County, Courthouse, bond election Sept. 26, county jail. $1,900,000. CD 9/11.

▲ Tex., Galveston—HOSPITAL—Galveston County, Courthouse, Galveston, bond election Sept. 26, memorial hospital addn. $2,500,000. CD 8/21/58.

Tex., San Antonio—SCHOOL—East Central Rural School Dist. No. 20, Rte. 6, Box 283, high and Junior High School addn. $550,000; elementary school improvs., enlargement $450,000.

Tex., San Antonio—SCHOOL—Edgewood Ind. School Dist., 525 Cupples Rd., Junior-High School, Loma Park Subdivision. $500,000.

Tex., Waxahachie — SCHOOL — Waxahachie Ind. School Dist., elementary school, $425,000; Turner High School addn. $475,000.

Va., Fort Belvoir—SCHOOL—Housing & Home Financing Agency, 2626 K St. N.W., Wash., D. C., plans by Williams & Assoc., 300 Montgomery St., Alexandria, elementary school, North Post $550,000, South Post $395,000. CD 7/2.

▲ Wash., Olympia—STATE OFFICE—State Capitol Comm., plans by P. Thiry, 800 Columbia St., Seattle, 8 story state office. $4,000,000. CD 11/2/55.

▲ Wis., Madison—BIOTRON LABORATORY—University of Wisconsin, constr. Biotron Laboratory. $1,500,000.

▲ Wis., Madison—ENGINEERING, etc.—University of Wisconsin, plans by Foeller, Schober, Berners, Safford & Jahn, 320 Pine St., Green Bay, engineering bldg. addn., $5,244,750, Bids after January, 1960, plans by Brust & Brust, 135 W. Wells St., Milwaukee, Zone 3, office bldg. for Extension Division, $1,675,000. CD 1/30.

▲ Wis., Madison—GYMNASIUM, etc.—University of Wisconsin, plans by Grassold-Johnson & Assocs., 744 N. Jefferson St., Milwaukee, Zone 2, First Sect. gymnasium, swimming pool. $2,000,000. CD 8/7/58.

Wis., Menomonie—HOSPITAL—Dunn Co., plans by Magney Setter, Leach, Linstrom & Erickson, Roanoke Bldg., Minneapolis, Minn., hospital addn. $600,000.

Wyo., Laramie—COMMERCE AND INDUSTRY—University of Wyoming, Campus, plans by Kellogg & Kellogg, 2309 Warren Ave., Cheyenne, 3 story, bsmt., 50,000 sq. ft. Commerce and Industry. $975,000. Bids about Oct. 1. CD 2/16.

Wyo., Newcastle — SCHOOL — Newcastle School Dist., plans by Goodrich & Wilking, 722 East Yellowstone St., Casper, elementary school. $650,000. CD 4/2.

B. C., Burnaby—JUNIOR HIGH SCHOOL—Burnaby School Bd., plans by Duncan S. McNab & Assocs., 1089 W. Broadway, Vancouver, 3 story, rein.-con. Junior High School, Armstrong Ave. $556,000.

COMMERCIAL BUILDINGS

▲ Ark., Hot Springs—SHOPPING CENTER—Plaza Land Inc., c/o A. G. Crawford, Hot Springs, shopping center, incl. 26 stores, 1,500 cars parking, SH No. 7 south city limits, $2,500,000.

Calif., Anaheim—DWELLINGS—George M. Holstein & Sons, 166 E. 17th St., Costa Mesa, plans by David Friedman, 221 S. Robertson Blvd., Los Angeles, 43 frame, stucco dwellings. $450,000.

Calif., Chico—CHURCH, etc.—First Baptist Church, c/o Lorrin L. Ward, archt., 336 Broadway, church, chapel, social hall, sanctuary, educational wing, offices, $400,000.

▲ **Calif., Sacramento**—OFFICE—Jack W. Greene Constr. Co., 3350 Fulton Ave., plans by Donald E. Thaden, Sparks & Thaden, 831 H St., 4 story, 160,000 sq. ft. Jamaica Terrace Office, near here, $3,000,000. Constr. soon.

▲ **Calif., Santa Clara**—HOSPITAL—Kaiser Foundation Hospitals, 368 42nd St., Oakland, plans by Clarence Mayhew, 251 Post St., San Francisco, hospital, $4,000,000.

▲ **Colo., Denver**—HOSPITAL—Mount Airy Foundation, Inc., 1205 Clermont St., plans by Fisher & Davis, 827 Denver National Bldg., hospital expansion, $3,000,000.

▲ **Colo., Littleton**—HOSPITAL—Columbine Hospital Assocs., c/o J. Raymond, Colo. Realty, 200 bed county hospital, west of Broadway and north of Ridge St., $2,250,000. CD 1/23, under Public Buildings, Arapahoe Co., as owner.

▲ **Conn., East Berlin**—HOUSES—George D. Anthony, et als, 35 Black Rock Ave., New Britain, 100 houses, $1,800,000.

▲ **Conn., East Haven**—RESORT—United House of Prayer for All People, Dixwell Ave., New Haven, shore resort, incl. boardwalk, restaurants, concessions, Mansfield Grove, $5,000,000.

Conn., New Britain—DEPARTMENT STORE—J. M. Fields, Inc., 451 Felis Way, Boston, Mass., 1 story, 44,000 sq. ft. department store, East Main St., $440,000.

▲ **Conn., Plainville**—BOWLING ALLEYS—Laurel Properties, Inc., New Britain Ave., 150,000 sq. ft. bowling alleys, New Britain Ave., $1,500,000.

Conn., Rocky Hill—CHURCH, etc.—St. James Parish, 12 Chapin Ave., plans by J. Gerald Phelan, 211 State St., Bridgeport, church and parish hall, Elm St., $400,000. Fletcher-Thompson, Inc., 211 State St., Bridgeport, consult. engr. CD 4/8.

Conn., Wallingford—COMMERCIAL—Porto Realty Co., 600 S. Colony Rd., commercial bldg., S. Colony Rd., $400,000.

Conn., Windsor—HOUSES—Pine Acres, Larch Drive, 87 houses, Pine Acres, Larch Drive, $870,000.

▲ **Del., Wilmington**—COUNTRY CLUB HOUSE—Wilmington Country Club, Pennsylvania Ave., plans by Whiteside, Moeckel & Carbonell, 9 and Market Sts., country club house, 3 swimming pools, tennis and squash courts, $2,500,000. Bids in late September or October.

▲ **Del., Wilmington**—LIBRARY—Longwood Foundation, Kennett Square, Pa., plans by Voorhees, Walker, Smith, Smith & Haines, 101 Park Ave., New York, N. Y., Eluterian Mills Historical Library, $1,500,000. Bids soon.

Fla., Miami—HOSPITAL—Desser & Garfield, Inc., 2900 NW 183rd St., plans by Connell, Pierce, Garland & Friedman, archts.-engrs., 315 NW 27th Ave., 1 story, 220x360 ft. CB-S hospital, NW 183rd St., west of NW 42nd Ave., $800,000.

Hawaii, Honolulu—APARTMENT—Kuhio Nui Apartments, Inc., 2916 Coconut Ave., plans by W. T. Spalding & Co. & Assoc., archts.-consult. engrs., 77 Merchant St., 7 story, 22-unit apartment, Kuhio and Lauhio Aves., $400,000.

▲ **Ill., Peoria**—APARTMENT—Co-Operative Apartment Development Corp., c/o Ray Stone, 3033 N. Atlantic Ave., plans by Foley, Hackler, Thompson & Lee, Commercial National Bank Bldg., 4 story, glass, brick apartment, Knoxville Ave. and Lake St., $1,000,000. Bids in 1960.

▲ **Ind., Gary**—MOTEL—Transamerican Constr. Co., 5242 N. Sheridan Dr., Chicago, Ill., 3 story, brick, structural steel frame, air-conditioned motel, swimming pool, parking, $3,000,000. Pascal Equipment Co., Inc., 738 N. Clark St., Chicago, Ill., consult. engr. CD 7/9.

▲ **Kan., Winfield**—LIBRARY and ADMINISTRATION—St. John's College, Winfield, library and administration, $1,100,000.

▲ **La., Shreveport**—DWELLINGS—Owners, c/o Morey & Burns, archts.-planners, Simons Bldg., 36 dwellings $438,875; 28 dwellings $408,500; 31 dwellings $417,000; 833 acres bought for commercial and dwellings.

Mass., Wilmington—CHURCH—St. Thomas R.C. Parish, plans by John A. McPherson, 250 Huntington Ave., Boston, church, $400,000. Constr. 1960.

▲ **Minn., West St. Paul**—STORES, etc.—Tissenbilt Homes, Inc., 625 Snelling Ave. S., St. Paul, stores, office bldgs., apartments, shops, filling stations, etc., South Robert St., Lothenbach Rd., Oakdale Ave., $16,000,000.

N. J., Englewood—HOME FOR AGED ACTORS—Actors Fund of America, 1619 Broadway, New York, N. Y., plans by Moon, Iwatsu & Macksoud, 40 Grand Ave., 6-story home for aged actors, West Hudson Ave., $600,000.

▲ **N. J., Levittown**—SHOPPING CENTER—Loomis J. Grossman, 565 Fifth Ave., New York 17, N. Y., shopping center, on 39 acre tract, Rte. 130 and Levittown Blvd., $2,000,000.

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▲ **N. J., Metuchen**—APARTMENT—A. & A. Oppenheim, 56 McPherson Ave., 70 unit apartment, McPherson Ave. **$1,000,000.**

▲ **N. J., Mountainside**—HOUSES—Concord Estates, c/o E. M. Kole, 17 Palisade Rd., Elizabeth, 58 houses, Lawrence Ave. **$1,750,000.**

▲ **N. J., Trenton**—APARTMENT—Herman Leichtung, 185 Montague St., Brooklyn, N. Y., plans by William G. Chirgotis, 80 Morris Ave., Springfield, garden apartment, **$1,000,000.**

▲ **N. Y., Corona** — HOUSING — Uniformed Sanitation Men's Assocs. Local 83, 428 Broadway, New York, Zone 13, plans by William Lescaze, 211 E. 48th St., New York, Zone 17, Cooperative Housing Proj., 3 bldgs. 14 to 16 story with 360 apartments on tract from 108 to 111 Sts. between 46th and 48th Aves. **$6,000,000.**

▲ **N. Y., East Quogue** — APARTMENTS — Sprayview Constr. Co., c/o George Cooper Rudolph and James W. Evans, archts., 155 E. 44th St., New York, three 2 story (Dune Crest) apartments, incl. swimming pool, Beach Rd., Southampton Twp. **$2,000,000.** Ballard, Todd & Snibbe, 123 E. 77th St., New York, Zone 21, consult. archts.

▲ **N. Y., New York**—APARTMENT—Max Bernstein, 415 E. 78th St., Zone 21, plans by Tabor & Horowitz, 443 Fourth Ave., Zone 16, apartment, 1476-78 First Ave. and 404-6 East 77th St. **$1,250,000.**

N. Y., New York—APARTMENT—Darnet Realty Corp., 678 Lexington Ave., Zone 22, plans by H. I. Feldman, 415 Lexington Ave., Zone 17, apartment, 131 East 55th St., 132-36 East 56th St. and 662-74 Lexington Ave. **$630,745.**

N. Y., New York—THEATRE IMPRVS.—Lowe's Capitol Theatre, 1639 Broadway, plans by John J. McNamara, 701 7th Ave., Zone 36, modernization of Capitol Theatre. **$750,000.** Henry Werner, 20-39 Shore Blvd., Long Island City, N. Y., structural engr.

▲ **N. Y., New York**—APARTMENT—Marshall Management Corp., 244 Madison Ave., Zone 16, plans by S. J. Kessler & Sons, 551 5th Ave., Zone 17, 21 story apartment, 1st Ave. and East 74th St., northeast corner. **$5,000,000.**

▲ **N. Y., New York**—APARTMENT—Marshall Management Corp., 244 Madison Ave., Zone 16, plans by S. J. Kessler & Sons, 551 5th Ave., Zone 17, 21 story apartment, 1st Ave. and East 76th St., northwest corner. **$5,000,000.**

▲ **N. Y., New York**—APARTMENT—Marshall Management Corp., 244 Madison Ave., Zone 16, plans by J. J. Kessler & Sons, 551 5th Ave., Zone 17, 21 story apartment, 1st Ave. East 81st St., northwest corner. **$5,000,000.**

▲ **N. Y., New York**—APARTMENT—Marshall Management Corp., 244 Madison Ave., Zone 16, plans by J. J. Kessler & Sons, 551 5th Ave. Zone 17, 21 story apartment, 1st Ave. East 82nd St., southwest corner. **$5,000,000.**

▲ **N. Y., New York**—APARTMENT—184 E. 84th St., Inc., c/o Cohen Bros. Realty & Constr. Co., 400 Madison Ave., Zone 17, plans by Schuman & Lichtenstein, 360 Lexington Ave., 21 story apartment, southwest corner 3rd Ave. and East 84th St. **$5,000,000.**

▲ **O., Avon Lake**—SHOPPING CENTER—Frielingsdorf Corp., Saddle Inn, plans by George S. Veinovich, 1922 E. 107 St., Cleveland, Zone 6, 500,000 sq. ft. Northgate Shopping Center, West Lake Rd. **$7,500,000.**

▲ **O., Granville**—COLLEGE UNION—Denison University, Granville, Slayter Hall College Union Bldg., **$1,000,000.** CD 6/19/56.

▲ **O., Newark**—SHOPPING CENTER—Southgate Shopping Center Corp., c/o John J. O'Neil, Newark, plans by C. Melvin Frank, Lindberg & Maki, 1650 W. 5th St., Columbus, 165,900 sq. ft. shopping center, Rte. 79. **$2,500,000.** Constr. this fall.

▲ **Tex., San Antonio** — SHOPPING CENTER, etc. — W. W. VanDerHeck, 351 Kate Schenck St., Frontier Junction, U.S.A. Shopping Center and recreation **$1,500,000.** Western type motion-picture plant, **$750,000;** open, paved vehicle parking area, **$200,000,** Frontier Junction, U.S.A. Loop 13 near Goliad Rd.

Tex., South Houston—DWELLINGS—A.B.C. Bldg. Corp., 762 Arvana St., 45 dwellings **$450,000;** 49 dwellings **$550,000,** Spencer Hy. and Perez St.

Tex., Sugarland—DWELLINGS—Leo O'Neal Interests, 3908 Main St., Houston, 21 dwellings Venetian Estates Subdivision, near here. **$515,000.**

Tex., Sugarland—DWELLINGS—Skylark Constr. Co. Inc., c/o Thos. L. James, pres. Residential Venice Inc., 25 dwellings, Venetian Estates Subdivision, near here. **$410,000.**

Tex., Sugarland—DWELLINGS—V&M Constr. Co., 10433 S. Post Oak Rd., Houston, 20 dwellings, Venetian Estates Subdivision, near here. **$416,500.**

Tex., Waco—SCIENCE—Baylor University, 1401 S. 5th St., science. **$750,000.**

▲ **Tex., Westaco** — HOSPITAL — Mid-Valley Hospital Corp., c/o H. Raymond Mills, Henson Bldg., plans by R. Newell Waters, 1st National Bank Bldg., 56,000 sq. ft. general hospital. **$1,500,000.** Kartsach & Engel, Maverick Bldg., San Antonio, consult. engrs. CD 9/9/57.

▲ **Wis., LaCrosse**—CHURCH—St. Joseph Cathedral, 530 Main St., plans by E. J. Schulte, 920 E. McMillan St., Cincinnati, O., church, **$2,000,000.**

▲ **Wis., Milwaukee**—APARTMENTS—American Federation of State, County & Municipal Employees Housing Corp., c/o Miller & Waltz, archts., 726 N. Milwaukee St., Zone 2, 33 apartments, **$1,000,000.** Bids soon. CD 10/15.

▲ **Wis., Milwaukee**—APARTMENT—Prospect Development Corp., c/o Maynard W. Meyer & Assocs., archts., 797 N. Jefferson St., Milwaukee, Zone 2, 13 story, 72-unit apartment, **$1,500,000.**

▲ **B. C., New Westminster** — NURSES RESIDENCE — Royal Columbian Hospital, 88 Sherbrooke St., plans by Townley & Matheson, 1376 Hornby St., Vancouver, 8 story, rein.-con., brick nurses residences, **$2,000,000.**

Ont., Burlington — OFFICE — Princeton Constr. Ltd., 519 Brant St., plans by Ralph M. Goldman & Assocs., 465 Wilson Ave., Downsview, Toronto, 6 story, 60,000 sq. ft. office, 525 Brant St. **$400,000.**

▲ **Ont., Ottawa**—OFFICE—Metcalfe Realty Co. Ltd., 140 Wellington St., 11 story, rein.-con., granite office, Metcalfe and Albert St. **$3,500,000.**

▲ **Que., Quebec City** — SHOPPING CENTER — LeCentre d'Achat Canardiere Ltee, c/o Lorne G. Power, 1 Raymond St., Giffard, plans by Greenspoon, Freedlander & Dunne, 4151 Sherbrooke St. W., Montreal, 1 story, cement block, brick shopping centre, Ste. Anne Blvd. **$1,500,000.**

▲ **Ont., Riverside**—APARTMENT—E. Lloyd Ecclestone, Manor Apartments, 8 story, 100 unit brick, steel apartment. **$1,000,000.**

INDUSTRIAL BUILDINGS

▲ **Ind., Mount Vernon**—POLYCARBONITE PLANT—General Electric Corp.-Realty & Constr. Div., 1 River Rd., Schenectady, N. Y., polycarbonite plant, incl. processing bldg., warehouse, boiler house and office bldg. **$6,000,000.** Crawford & Russell, 695 Summer St., Stamford, Conn., consult. engrs. CD 6/12.

Ind., Rochester—MFG. PLANT—Torrington Mfg. Co., 70 Franklin St., Torrington, Conn., 1 story, 25,000 sq. ft., brick, block mfg. plant. **$250,000.** Constr. in 1960.

▲ **Ky., Brandenburg**—PLANT—Olin Mathieson Chemical Co., 460 Park Ave., New York 22, N. Y., plant to produce glycerin, epichlorohydrin, propylene oxide, propylene glycol and polypropylene glycols; plant addn. for poly-sols glycol ethers, etc. **$20,000,000.**

▲ **Ky., Owensboro**—STEEL REHEATING FACILITIES—Green River Steel Co., (sub. of Jessop Steel Co.), Sidney and Litchfield Rd., steel reheating facilities at steel plant. **$1,000,000.**

Me., Houlton—PLANT—Aroostock County Potato Products Co., plans by Alonzo J. Harriman, Inc., 292 Court St., Auburn, starch plant. **$500,000.** Constr. 1959.

Mass., Medford—GARAGE—Riverside Transportation Co., 380 Main St., plans by Wagner, Salisbury & Harding, 120 South Common St., Lynn, garage, Locust St. **$150,000.**

▲ **Mo., St. Charles**—PLANT—Monsanto Chemical Co., 800 N. Lindbergh Blvd., Creve Coeur, plant for mfg. pure silicon, jct. Hy. 70 and Missouri Hy. 79, west of here.

▲ **N. Y., Niagara Falls** — PLANT — Olin Mathieson Chemical Corp., 460 Park Ave., New York, Zone 22, chlorine plant addn. **$5,000,000.**

▲ **N. Y., New York**—GARAGE—Syndicate, c/o First Republic Corp., 49 W. 32nd St., Zone 1, 10 story, 30,000 sq. ft. garage between 8th and 9th Aves., West 43rd and 44th Sts. **$1,000,000.** Velvex Parking Center, Inc., lessee.

R. I., Cranston—WAREHOUSE—International Supply Co., 190 South Water St., Providence, plans by Guillemette Assocs., archts.-consult. engrs., 428 Howard Bldg., Providence, warehouse, off Niantic Ave. **$125,000.** Bids soon.

▲ **R. I., Portsmouth** — PLANT — Raytheon Mfg. Co., Foundry Ave., Waltham, Mass., mfg. plant, Lawton Valley site. **$2,000,000.** Charles A. Maguire & Assoc., Turks Head Bldg., Providence, consult. engr.

Tenn., Crossville—FACTORY—Roselon Yarns, Inc., Danville, Pa., clothing factory **$300,000.** Emil Johnson, c/o owner, staff engr.

Tenn., Knoxville—WAREHOUSE—Bristol Glass Co., 1209 Euclid Ave., N.E., warehouse. **$137,000.**

Tenn., McKenzie—PLANT—McKenzie Boat Co., boat mfg. plant. **$125,000.**

Tex., Abilene—PLANT—Gooch Packing Co., 800 Almond St., plans by Henschien, Everds & Crombie, 59 E. Van Buren St., Chicago, Ill., meat packing plant expansion. **$150,000.**

Tex., Beaumont—WAREHOUSE, etc.—Owners, c/o GC & SF Ry. Co., Calder St., 147,000 sq. ft. warehouse **$750,000,** shop **$125,000,** Industrial Subdivision, North Beaumont.

Tex., Diboll—PLANT, Angelina Furniture Mfg. Co., 35,000 sq. ft. furniture mfg. plant. **$285,000.**

Tex., Houston—PLANT—American Industrial Fabricators, Inc., 6700 Liberty Rd. (subsidiary Yuba-Consolidated Industries, Inc., San Francisco, Calif.), chemical and petroleum furnace mfg. plant remodeling. **$400,000.**

▲ **Tex., Houston** — PLANT — Foremost Dairies, 1220 Smith St., milk and products plant, Sharpstown. **$3,000,000.**

Tex., Houston—WAREHOUSE—M. I. Leicher, 7311 Almeda Rd., warehouse. **$245,000.**

▲ **Tex., Midlothian**—PLANT—Texas Industries, Inc., 1st National Bank Bldg., Dallas, cement mfg. plant, near here. **$3,000,000;** power plant, **$500,000.**

Que., Cowansville — PLANT — Visking Co., Div. Union Carbide Canada Ltd., 2221 Yonge St., Toronto, Ont., 24,000 sq. ft. "VisQueen" polyethylene plant. **$150,000.**

Que., Montreal—WAREHOUSE, etc.—Orange Crush Ltd., 1016 Bleury St., 1 story, 140x340 ft. warehouse and office, Jarry Park. **$500,000.**

UNCLASSIFIED

▲ **Ark., North Little Rock**—ELECTRICAL DISTR. SYS.—City, City Council, electrical distr. sys. rehabilitation and extension. **$2,100,000.** J. R. Burnett, Engineer & Manager, City Electrical Dpt.

Colo., Littleton—PARK AREA—Arapahoe County Courthouse, plans by S. R. DeBoer, landscape archt., 515 Cliff, Denver, park and recreational area, incl. swimming pool, zoo. **$400,000.**

Fla., Sarasota—MARINA—City, City Hall, marina. **$250,000.** Gee & Jensen, Inc., 1174½ S. Dixie Highway, West Palm Beach, consult. engr. A. S. Martin, 502 Main St., Dunedin, staff engr.

Indiana—GAS DISTRIBUTION SYSTEM—Midwest Gas Corp., 167 W. Walnut St., North Vernon, gas distr. sys., incl. 85,000 lin. ft. 6-in. transmission lines, 127,000 lin. ft. 2- to 7-in. distr. lines, 58,000 lin. ft. ¾ in. service lines, Salem, Washington Co. **$900,000.** F. R. Friewald, Bellville, Ill., consult. engr.

Indiana—POWERHOUSE—Southern Indiana Gas & Electric Co., Hulman Bldg., Evansville, powerhouse, Proj. 2265, Warrick Co. **$300,000.**

Kansas — DISTRIBUTION LINES — Leavenworth-Jefferson Electric Cooperative, McLouth, 30 mi.² distr. lines, 13 mi. tie lines, 25 mi. line conversion, Proj. Kansas-401-Leavenworth. **$283,000.** CD 5/21/54.

Kan., Emporia—CATTLE FEEDING YARDS—The Teichgraeber Milling Co., cattle feeding yards, incl. 37 pens, fencing, concrete aprons, feeding bins, water tanks, etc., southwest of here. **$150,000.** (Plans to start constr. Fall 1959).

Minn., Worthington—SWIMMING POOL—City, City Hall. **$150,000** bond election Sept. 29, municipal swimming pool. CD 11/19/56.

▲ **Mo., St. Louis**—PLANETARIUM—City, Bd. P. Service, 304 City Hall, Zone 3, plans by Hellmuth, Obata & Kassabaum, 315 N. 10th St., Zone 1, circular planetarium, Forest Park. **$1,000,000.** Albert Alper, 6635 Delmar Blvd., St. Louis 12, Mo., consult. engr. CD 3/6/58.

▲+ **Neb., Lincoln**—LINCOLN ATLAS MISSILE—U. S. Eng., 1709 Jackson St., Omaha, Lincoln Atlas Missile will consist of 9 launcher sites around the city. **$12,000,000** (no appropriation).

▲ **N. Y., Brooklyn**—PIER, etc.—Port of New York Authority, 111 8th Ave., New York, Zone 11, two-berth Pier 6, 680 ft. south side, 650 ft. north side and 340 ft. wide with 30 ft. wide aprons, incl. 176,400 sq. ft. pier shed supported by 170,000 sq. ft. paved upland area, Baltic Terminal area, Brooklyn-Port Authority, foot of Atlantic Ave. **$5,640,000.**

N. Y., Buffalo—LAKE IMPRVT.—City, City Hall, Delaware Park Lake imprvt. **$250,000.** McFarland & Johnson, Sidway Bldg., consult. engrs. CD 12/19/56.

N. C., Raleigh—RECREATION SYSTEM—City, City Hall, voted **$750,000** bonds Aug. 11, recreation system imprvs., enlargement. CD 7/17.

Ohio—GAS LINES—Ohio Fuel Gas Co., 99 N. Front St., Columbus, 10 mi. natural gas lines to Cedar Point area, Sandusky, Erie Co. **$200,000.** Constr. about Oct. 1.

Okla., Chickasha—GAS LINES—Lone Star Gas Co., 301 S. Harwood, Dallas, Tex., gas lines in Knox Field, near here. **$150,000.**

Texas—RURAL DISTRIBUTION LINES—Deep East Texas Electric Co-operative, San Augustine, 225 mi. electric distr. lines, San Augustine-San Augustine Co. (Texas 64-AC-San Augustine). **$520,000.** CD 6/7/55.

Texas—RURAL TELEPHONE LINES—Four State Telephone Co., Brownwood, 223 mi. rural pole telephone lines, Brownwood, Brown Co. **$200,000.**

Tex., Beaumont—GOLF COURSE—Boggy Creek Golf & Country Club, Vernon Jones, chn., c/o 1872 Calder Ave., 18 hole golf course, 400 acre site, Boggy Creek 6 mi. N.W. of here. **$110,000.**

Tex., Bryan—RAILWAY TRACKS—City, City Hall, removal downtown railway tracks. **$100,000.**

▲ **Tex., San Antonio**—NATURAL GAS LINES—City Public Service Bd., Box 1771, Navarro and Villita Sts., replacing 4 in. & 6 in. and 12 in. natural gas lines, **$18,000,000,** 11,800 ft. 12 in. steel gas line, Sherman to San Marcos Sts. **$135,000.** CD 6/4/53.

Wis., Oshkosh—SWIMMING POOL—City, City Hall, plans by Irion & Reinke, 805 Main St., swimming pool, **$300,000.** Hugh M. McClure & Assocs., 53 W. Jackson St., Chicago, Ill., consult. engrs.

▲ **B. C., North Vancouver**—DEEP SEA TERMINAL—Vancouver Wharves, 1178 W. Pender, Vancouver, plans by Swan, Wooster & Partners, archts.-engrs., 1334 W. Pender, Vancouver, first phase, Deep Sea Terminal, incl. dredging 350,000 cu. yds. to reclaim 25 acres, 80x800 ft. deck, creo. timber piles, plank deck, 3,000 ft. track, rail crane, open storage for sulphur, coal, ore, cars, rotary car dumper and conveyor belt, D. A. McMillan, 2020 Yukon St., Vancouver, owner's engr.

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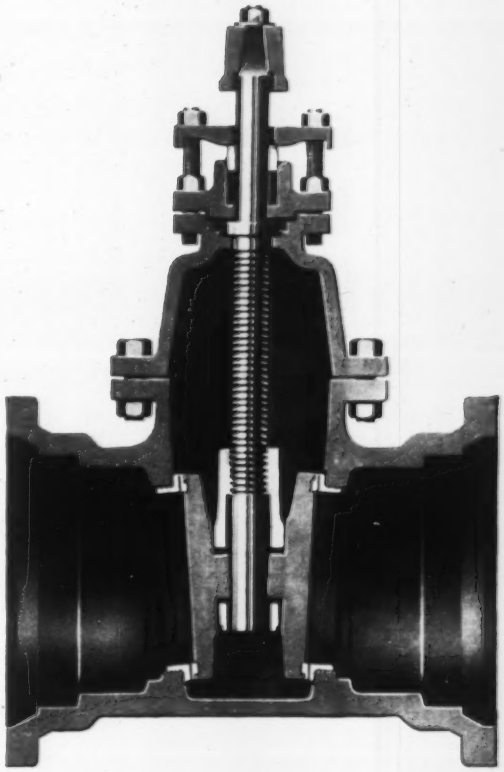

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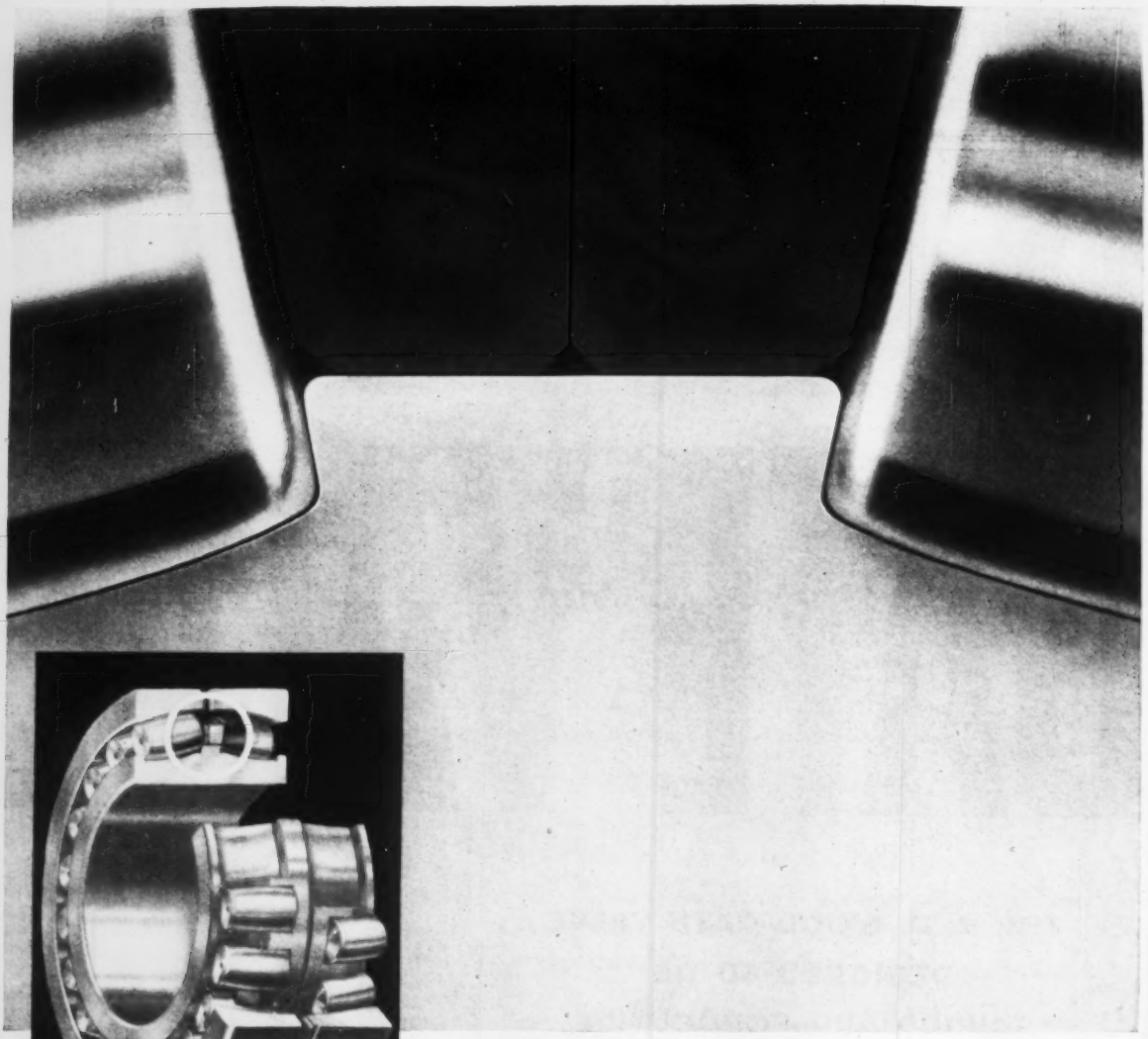

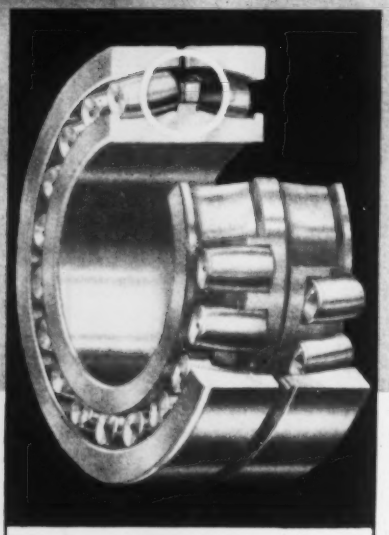

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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BUILDINGS—BA

▲ Me., Lewiston—PLANT—BA 9/11—Raytheon Mfg. Co., Foundry Ave., Waltham, Mass. (selected list of bidders), manufacturing plant, Lisbon Rd., $2,500,000. Anderson-Nichols & Co., 150 Causeway St., Boston, Mass., engrs. CD 7/7.

▲ Mass., Winchendon—SCHOOL—BA 9/24—Town, junior-senior high school, Grove St. and Murdock Ave., $1,285,996. Plans deposit $100. Perley F. Gilbert & Assoc., Inc., Sun Bldg., Lowell, Mass., archt. CD 2/12.

BUILDINGS—LB & CA

▲ Theodore Loranger & Sons, 404 Nash Rd., New Bedford, Mass., CA $1,401,873, est. $1,425,000, Mass. 60-C-201-A10, SENIOR HIGH SCHOOL, near Waterhouse Rd., BOURNE, MASS., Town Supt. Schools, Senior High School, Buzzards Bay, Mass. Bids July 29, awarded Aug. 24. CD 8/3, under LB.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

N. Y., Brooklyn—TEST PILES—BA 9/8—Port of New York Authority, 111 8th Ave., New York. Zone 11, driving and loading test piles for proposed Pier No. 6, Brooklyn-Port Authority Piers, Contr. BP-502.277. CD 8/20.

▲ Pa., Pittsburgh—BA 9/8—Bd. Comrs., Allegheny Co., County Office, superstructure and deck paving, 62nd St. bridge, No. 8, Allegheny River. Contract No. 3. Plans deposit $75. CD 5/15/56.

BUILDINGS—BA

▲ N. Y., Riverhead—SCHOOL—BA 9/10—Diocesan Bldg. Office, Clinton St., Box 120, Rockville Centre, N. Y., Mercy High School, $2,500,000. William J. Boegel, 12 E. 48th St., New York 17, N. Y., archt. Gennaro Miranullo, 185 Montague St., Brooklyn 2, N. Y., engr. CD 3/2.

▲ Pa., McKeesport—HOUSING—BA 9/18—Housing Auth., City of McKeesport, Ohio and Brownlee Sts., general constr., site improvs., and utilities, heating, ventilating, plumbing, electrical work for four 8 story, 300 unit dwellings, 3rd Ward and 8th Ward. Plans deposit $50. Ceilli-Flynn, 335 Shaw Ave., archts.-engrs. CD 9/19/56.

HEAVY CONSTRUCTION—LB & CA

▲ NEW JERSEY—State Hy. Dpt., 1035 Parkway Ave., Trenton.

Yonkers Contracting Co., 969 Midland Ave., Yonkers, N. Y., CA $5,333,902, grading, paving and bridges 1.985 mi., Rte. 287, Sect. 1B, from U.S. Rte. 22 interchange to viaduct at Lehigh Valley Railroad, Bridgewater Twp., Somerset Co. Bids July 31, awarded Aug. 25. CD 8/4, under LB.

▲ Rusciano Constr. Corp. and DelBalso Constr. Co., 2 Penn Pl., Pelham Manor, N. Y. (joint venture), LB $3,640,966 (7 bidders), approach roadway sys. for lower level expansion of George Washington Bridge between Fletcher and Lemoine Aves., Fort Lee Boro, New Jersey, Contr. GWB-190.025, NEW YORK and NEW JERSEY Port of New York Authority, 111 Eighth Ave., New York 11, N. Y. Bids Aug. 25. CD 8/20.

BUILDINGS—LB & CA

▲ Clearview Homes, c/o Lane Realty Co., 107-40 Queens Blvd., Forest Hills, N. Y., Owner Builds, $1,400,000, 78 HOUSES, Burr Rd., north of Jericho Turnpike, EAST HUNTINGTON, N. Y.

▲ Frouge Constr. Co., Inc., 680 Fifth Ave., New York, N. Y., LB $6,167,000, (10 bidders) fdns. and general contract, STAPLETON HOUSES, Proj. No. NYS-88, Broad St., Tompkins Ave., Hill St., Warren St., and Gordon St., Richmond Boro, STAPLETON, N. Y., New York City Housing Auth., 299 Broadway, New York 7, N. Y. Bids Aug. 25. CD 8/20.

Afgo Engrg. Corp., 475 Adelphi St., Brooklyn 17, N. Y., LB $715,000, tie bid (3 bidders), heating and ventilating, Stapleton Houses, Richmond Boro (Stapleton, N. Y.).

H. Sand & Co., 11 Park Pl., New York 7, N. Y., LB $715,000 tie bid (3 bidders), heating and ventilating, Stapleton Houses, Richmond Boro (Stapleton, N. Y.).

Dropkin Bros., Inc., 149 Broadway, Brooklyn 11, N. Y., LB $598,990 (5 bidders), electrical work, Stapleton Houses, Richmond Boro (Stapleton, N. Y.).

Novak & Co., Inc., 1503 East New York Ave., Brooklyn 12, N. Y., LB $813,737 (8 bidders), plumbing, Stapleton Houses, Richmond Boro (Stapleton, N. Y.).

▲ John McShain, Inc., 17th and Spring Garden Sts., Phila., Pa., LB $6,114,000, general constr. INSTITUTION for mentally retarded children, Phase I, Western Pa. School and Hospital, CANONSBURG, PA. General State Auth., 18th and Herr Sts., Harrisburg, Pa. Bids Aug. 26. CD 8/7.

Limbach Co., 521 Pressley St., Pittsburgh, Pa., LB $1,679,000, heating and ventilating for institution (Canonsburg, Pa.).

Daniel J. Keating Co., 3917 Baring St., Phila., Pa., LB $993,000, plumbing for institution (Canonsburg, Pa.).

Reno Electric Co., 1006 Merchant St., Ambridge, Pa., LB $689,733, electrical work for institution (Canonsburg, Pa.).

▲ Martin & Seymour Greenblatt, c/o Lawyers Mortgage & Title Co., 133 Cedar Lane, Teaneck, N. J., Owner Builds, $2,000,000, 105 HOUSES, 1st section, Banberry Lane, NEPTUNE, N. J., Gerber & Pancani, 11 Commerce St., Newark, N. J., archts.

R. A. Prendergast & Son, 3010 Sunset Ave., Atlantic City, N. J., LB $972,414, est. $1,639,317, 1 story, 90,000 sq. ft., brick, block, processed enamel panels, Regional High SCHOOL, Linwood, PLEASANTVILLE, N. J., Mainland Regional High School Auth., Linwood, N. J., Edward Schnitzer, 55 Front St., Rockville Centre, N. Y., engr. CD 6/4/58.

▲ Nansen Builders, Bayview Ave., Englewood Cliffs, N. J., Owner Builds, $1,000,000, twenty-eight, 2 family HOUSES, Bergen Blvd., RIDGEFIELD, N. J., C. J. Kordys, 1374 Hamburg Turnpike, Wayne, N. J., archt.

▲ Robert E. Lamb Inc., 3429 W. Indiana Ave., Phila., Pa., CA $1,200,000, 1 story, 100 x 150 steel frame and masonry STORAGE bldg., PHILA. PA., Franklin Container Corp., 7900 Tabor Rd., Phila., Pa.

SOUTH

HEAVY CONSTRUCTION—BA

† Louisiana—BA 9/24—U. S. Eng., foot of Prytania St., New Orleans, La., restoration and riprap slope pavement, Item M-21.6R, Lower Childress levee, Plaquemine Parish, Inv. 60-43.

† West Virginia—BA About 9/24—U. S. Eng., P.O. Box 2127, Huntington, Zone 18, mooring facilities, Lot A, and Lot B, Winfield and Marmet Locks, Kanawha River, Kanawha Co., CIVENG-46-022-60-10.

† Florida—BA 10/1—U. S. Eng., 575 Riverside Ave., Jacksonville, maintenance dredging, turning basin, Miami Harbor, CIVENG-08-123-8. CD 11/24/43.

Ala., Birmingham—BA 10/6—Bd. Comrs. Jefferson Co. Courthouse, Five Mile Creek Trunk Sewer. (Correction—bid date). CD 7/1.

BUILDINGS—BA

Ky., Versailles—PLANT—BA 9/23—International Paper Co., 220 E. 42nd St., New York, N. Y., (selected list bidders), milk carton plant near U. S. 60 by-pass, $500,000. Meriwether Marye & Assoc., 248 E. Short St., Lexington, Ky., archts. Proctor Ingles, 915 S. Limestone, Lexington, Ky., engr. CD 12/18/58.

▲ Ala., Mobile—SCHOOL—BA 9/29—Mobile Co. Bd. Educ., Barton Academy, Trinity Gardens Junior High School, $1,000,000. Platt Roberts & Co., Merchants National Bank Bldg., archts. CD 6/30/58.

▲ Fla., Fort Pierce—COURTHOUSE AND JAIL—BA 10/7—St. Lucie County Bd. Comrs., Courthouse, courthouse and jail, $1,500,000. J. Gamble Rogers, Lovelock & Fritz, 145 Lincoln Ave., Winter Park, archts. CD 4/24/58.

HEAVY CONSTRUCTION—LB & CA

▲ ALABAMA—State Hy. Dpt., Montgomery, Bids opened 8/21.

Ala., B. F. Williams Constr. Co., Ozark, Ala., LB $324,739, grade, drain, and pave 4.098 mi. U. S. 84 by-pass at Enterprise, Coffee Co., LB $89,846, grade, drain and bit. 3.577 mi. on county road south and west from Pinckard, Dale Co., LB $89,289, base and bit. 11.011 mi. on various county roads, Geneva Co.

Ala., Newell Roadbuilders Inc., Hope Hull, Ala., LB $1,503,195, grading and draining 8.33± mi. between Whitney and Steele on Inter. Rte. 59, St. Clair Co.

Ala.—Burgreen Constr. Co., Inc., Athens, Ala., LB $1,495,423, grade, drain and pave 5.808 mi. U. S. 431 from Huntsville S.E. toward Guntersville, Madison Co.

Ala.—Hooper & McDonald, Andalusia, Ala., LB $143,032, base, and bit. 17.189 mi. on various county roads, Covington Co.

Ala., George A. Dozier Contractor, 4144 Wares Fy Rd., Montgomery, Ala., LB $414,119, grade, drain, pave and bridge culvert 0.455 mi. on U. S. 80 W. of Montgomery, Montgomery Co. CD 8/7.

Hammond Iron Works, 401 Ave. W., Pratt City, Birmingham, Ala., LB $634,000 (6 bidders), two 5 m. g. steel ground storage reservoirs and ten 500,000 gal. steel surge tanks and foundations, BIRMINGHAM, ALA., Industrial Water Bd. City of Birmingham, City Hall, Birmingham, Ala. Bids Aug. 11. CD 7/27.

BUILDINGS—LB & CA

▲ Mott Construction Co., Weirton, W. Va., Own Forces, $4,000,000, 200 HOMES, Pleasant Hills development, WELLSBURG, W. VA.

▲ A. C. Samford, Inc., P.O. Box 1229, Albany, Ga., LB $2,187,500, women's DORMITORY, GREENVILLE, S. C., Furman University, Bd. Trustees, Greenville, S. C. Bids Aug. 20. CD 7/17.

▲ Beers Constr. Co., 70 Ellis St., N. E., Atlanta, Ga., CA $1,497,650, RESEARCH FACILITIES addn., Eugene Talmadge Memorial Hospital, AUGUSTA, GA., University System Bldg. Auth., 244 Washington St., S. W., Atlanta, Ga. Bids July 15, awarded Aug. 5. CD 7/21, under LB.

▲ Whittenberg Constr. Co., 2127 S. Floyd St., Louisville, Ky., LB $1,407,000, Base Bid (11 bidders) STATE OFFICE BLDG., LOUISVILLE, KY. Commonwealth of Ky., Div. of Purchase, Frankfort, Ky. Bids Aug. 25. CD 7/31.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

Ind., Fort Wayne—BA 9/8—Bd. P. Wks., City Hall, storm sewer southwest area, bounded by Rudisill Blvd., Webster St., Lexington Ave. and Tacoma Ave., $100,000. CD 8/18.

▲ Ill., Chicago—BA 9/10—Dpt. Purchases, City Hall, Zone 2. Spec. 80-68-59-7, 2 steel, concrete Harrison St. bridges, South Rte. "Superhighway," $1,250,000. CD 1/20.

† Ok., Wilmington—READINESS CREW—BA 9/17—U. S. Eng., 237 4th Ave., Huntington, W. Va., security facilities for readiness crew bldg., Clinton County Air Force Base, Linn Co., Eng. 46-022-60-1. Advanced date. CD 8/19.

BUILDINGS—BA

† Mich., Dearborn—POST OFFICE IMPRVS.—BA 9/15—Gen. Services Admin., 219 S. Clark St., Chicago, Zone 4. U. S. post office alterations and repairs, $200,000. E. Lawrence, 219 S. Clark St., Chicago 4, Ill., archt. Former bids rejected. CD 4/24.

O., Northfield—SCHOOL—BA 9/17—Bd. Educ., Northfield-Macedonia School Dist., Northfield grade school addn. Plans deposit $50. Walter G. Caldwell, 841 Engineers Bldg., Cleveland, Zone 14, archt. CD 5/27/53.

Ind., Kingsford Heights—SCHOOL—BA 9/21—Trustee & Advisory Bd., Union Twp., RFD No. 1, Union, 1 story, 28,000 sq. ft., brick, concrete block elementary school, $400,000. Plans deposit $30. Frederick Collins & Assocs., 400 W. 5 Ave., Gary, archts.

▲ Ill., Chicago—APARTMENT—Bids Asked—Herman A. Neiburger, 33 N. LaSalle St., Chicago, Zone 2, 19 story, rein. con., 180 unit apartment, $3,000,000. Loewenberg & Loewenberg, 120 S. LaSalle St., Chicago, Zone 3, archts. CD 7/3.

HEAVY CONSTRUCTION—LB & CA

▲ Vic Kirsch, 7020 Cline Ave., Hammond, Ind., CA $909,383, Div. 27A, combined sewerage, Robertsdale area, HAMMOND, IND., Hammond Sanitary Dist., 5143 Columbia Ave., Hammond, Ind. Bids July 16, Awarded Aug. 1. Grand total $1,742,852. CD 7/22, under LB.

Santucci Constr. Co., 5025 Church St., Skokie, Ill., CA $242,853, Div. 27B; CA $590,616, Div. 28, (Hammond, Ind.).

BUILDINGS—LB & CA

▲ George Cassidy Co., 5125 W. Division, Chicago, Ill., CA $4,000,000, MOTEL, Shelter imprvs., Illinois Beach State Park, north of Waukegan, ILLINOIS State Div. Arch & Eng., State Capitol, Springfield, Ill. Barancik & Conte, 332 N. Michigan, Chicago, Ill., archt. Awarded Aug. 4. CD 5/24/57.

▲ Frank Heinz Constr. Co., 2506 S.W. Adams, Peoria, Ill., CA Est. $1,000,000, 1 story, 140,000 sq. ft. WAREHOUSE AND COFFEE ROASTER PLANT, Expressway and Rte. 150, EAST PEORIA, ILL. Chris Hoerr & Son, 1321 S.W. Washington St., Peoria, Ill. CD 5/26.

▲ Walsh Constr. Co., 1141½ W. 3 St., Davenport, Iowa, and Eichleay Corp., 33 S. 19 St., Pittsburgh, Pa., CA $15,000,000, STEEL MILL, sewerage and fdn. work, Portage, Ind., CHESTERTON, IND., Midwest Steel Corp., Div. National Steel Corp., Grant Bldg., Pittsburgh, Pa. Bids Aug. 14. CD 6/18.

▲ Koppers Co., Koppers Bldg., Pittsburgh, Pa., CA Total Project $60,000,000, two OKYGEN CONVERTORS (basic oxygen steel making furnaces), CLEVELAND, O. Jones & Laughlin Steel Corp., 401 Liberty Ave., Pittsburgh, Pa. CD 5/5.

Arthur J. McKee Co., 2300 Chester Ave., Cleveland, O., CA, BLAST FURNACE, Osis Works (Cleveland, O.).

▲ Salem-Brosius, Inc., 12 Arch-St. Exten., Carnegie, Pa., CA 4-5 zone slab REHEATING FURNACES, ECORSE, MICH., Great Lakes Steel Co.; Div. National Steel Corp., 2800 Grant Bldg., Pittsburgh, Pa. CD 6/22 under CA.

▲ Alliance Homes, Inc., 2510 Center St., Alliance, O., Owner builds $4,000,000, 350 Baronwood Estate HOMES on 168 acres, off Rte. 18, northeast corner Rte. 18 and Rte. 44, ROOTSTOWN, O.

▲ Dyer Homes, c/o W. E. Dyer, 719 Far Hills, Dayton, O., Own forces $5,000,000, 267 HOMES, Sycamore Heights development, SPRINGBORO, O.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

Minn., Arden Hills—BA 9/11—Village, Village Hall. Proj. 1, 5,900 lin. ft. 8 to 10 in. sanitary sewer, 800 lin. ft. 6 in. c.i. force main; Proj. 2, sewage pumping station, Ridgewood Rd. 300 ft. north of intersection with Glenhill Rd. $88,000. Banister Engineering Co., 310 N. Snelling Ave., St. Paul, Minn., engr.

† **Tex., Taylor**—BA 9/11—Brushy Creek WC&ID No. 1, Williamson and Milam Counties, P.O. Box 1183, Taylor, floodwater retarding structures Sites 7 and 13, Williamson Co.; Lower Brushy Creek, for Soil Conservation Service. Plans deposit $5. CD 2/6.

▲ **Colo., Denver**—BA 10/8—Denver Bd. Water Comrs., 114 West Colfax, Denver, approx. 96 ft. high Dillion Dam. $20,000,000. Tipton & Kalmbach, Insurance Bldg., Denver, engrs. CD 7/30.

BUILDINGS—BA

▲ **Tex., Irving**—SCHOOL—BA 9/16—Irving Ind. School Dist., 190,000 sq. ft. high school $2,250,000. Plans deposit $50. Extended date Wright, Rich & Assocs., 4350 N. Central Expressway, Dallas, archts. Ed. L. Wilson, 1819 Commerce St. and Wm. K. Hall, Exchange Bank Bldg., Dallas, engrs. CD 8/5.

▲ **Colo., Grand Junction**—HOSPITAL—BA 9/17—St. Mary's Hospital, 7 and Patterson Rd., hospital addn. $1,000,000. Robert Irwin, 1250 Wadsworth St., Denver, archt. CD 12/2/58.

▲ **Minn., New Prague**—SCHOOL—BA 9/17—Bd. Educ. Independent School Dist. No. 721, school addn. $1,000,000. Plans deposit $30. H. H. Swanson, 500 Sexton Bldg., Minneapolis, Minn., archt.; L. C. Gross, 507 Sexton Bldg., Minneapolis, Minn., consult. engr. CD 12/18/58.

▲ **Minn., Bloomington**—SCHOOLS—BA 9/22—Bd. Educ., two 1 story, 185 x 365 ft. each, elementary schools; one at 84th St. and Xerxes Ave. and one at 112th St. and Rich Rd. $1,120,000. Plans deposit $35 each general. E. D. Corwin & Assocs., Inc., E. 818 1st St., National Bank Bldg., St. Paul, Minn., archts. R. D. Thomas & Assocs., 1200 Metropolitan Bldg., Minneapolis, Minn., engrs. CD 6/17.

▲ **Tex., Houston**—PLANT—Bids Asked. Armour & Co., Union Stock Yards, Chicago, Ill. and 1016 Commerce St., Houston, meat processing and packing plant, Rankin Rd. and Hankin St. $2,000,000. Wyatt C. Hedrick Co., 5201 Fannin St., engrs. CD 12/1/58.

HEAVY CONSTRUCTION—LB & CA

▲† **Ferber Co.**, 16 Johnson Ave., Hackensack, N. J., CA $2,123,512. Nike-Hercules facilities, Schilling Air Force Base Defense Area, ENG 23-028-59-66, SALINA, KAN., U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo. Bids June 18. CD 7/1 under LB.

▲ **IOWA**—State Hy. Comn., Ames. Bids opened 8/25. Iowa: **Cameron, Joyce & Co.**, 19 S. 7 St., Keokuk, Iowa, LB $1,646,542, c. conc. pavement 3.9±2 mi., I-IG(80-4)141(42), Polk Co.; LB $649,908, c. conc. pavement 1.656 mi., I-80-5(71)46, Polk Co. Iowa: **Jackson Constr. Co., Inc.**, Hy. No. 30 West, Nevada, Iowa, LB $190,468, c. conc. pavement, widen 1.8± mi., I-IG(46)161, Linn Co. Iowa: **Norris Constr. Co.**, 111 South Wapello St., Ottumwa, Iowa, LB $702,096, b. conc. pavement 8.561 mi., F-FG-78(6), Lee Co. CD 8/12.

BUILDINGS—LB & CA

▲ **Sam Patti Constr. Co.**, 1340 Admiral St., Kansas City, Mo., LB $1,558,000 (14 bidders), POST OFFICE and COURT HOUSE, FORT DODGE, IOWA. General Services Admin., 2306 E. Bannister Rd., Kansas City, Mo. Bids Aug. 25. Griffith Co., P.O. Box 90, South Kenyon Rd., Fort Dodge, Iowa, archt. CD 7/28.

Randolph Engineering Co., Midland, Tex., CA Est. $875,000, GAS PLANT enlargement, ELECTRA, TEX., Magnolia Petroleum Co., Magnolia Bldg., Dallas, Tex.

Wilco Constr. Co., 340 W. Lake St., Fort Worth, Tex., LB $178,500, est. $200,000, 1 story, bunit., 17,800 sq. ft. brick, tile, steel, rubber products FACTORY and office, 7449 E. Lancaster, FORT WORTH, TEX., Acushnet Process Co., Bellville Ave., New Bedford, Mass., Walter Kidde Southwest, 1205 Holman Ave., Houston, Tex., archt. CD 7/31.

▲ **Robert Paulus Constr. Co.**, 3441 Morganford Rd., St. Louis 16, Mo., LB $4,236,000, est. over $4,000,000, Base (Bid to bidders), 3 story, bunit., brick, concrete, masonry, steel CLINIC and ADMINISTRATION BLDG., St. Louis State Hospital, 5400 Arsenal St., ST. LOUIS, MO., St. Louis State Hospital, 5400 Arsenal St., St. Louis 9, Mo., and State of Missouri Planning & Constr. Office, 100 State Capitol, Jefferson City, Mo. Bids Aug. 25. CD 7/28.

▲ **Robert H. Smith Constr. Co.**, 1915 Keltah St., Houston, Tex., CA $1,082,800, HIGH SCHOOL, ANGLETON, TEX., Angleton Ind. School Dist., Angleton, Tex. Bids Aug. 13. CD 8/20, under LB.

Lehr Constr. Co., 1721 Frederick Ave., St. Joseph, Mo., CA Est. over $500,000, 1 story, 175x300 ft. MANUFACTURING PLANT and 36x100 ft. WING, US No. 71 and Gene Field Rd., ST. JOSEPH, MO., Civic Industrial Assn., c/o St. Joseph Chamber of Commerce, St. Joseph, Mo., Research Laboratories, Inc., Div. of Anchor Service Co.), 24th and Frederick Aves., St. Joseph, Mo., lessee.

FAR WEST

HEAVY CONSTRUCTION—BA

† **Washington**—BA 9/15—Bureau Reclamation, Dpt. Interior, Ephrata, earthwork and structures for wasteways and drains, Blocks 42, 421 and 45, Columbia Basin Proj., Grant Co., Spec. 117C-565. CD 9/10/56.

▲† **California**—BA 9/16—U. S. Eng., 751 S. Figueroa St., Los Angeles, dredging and revetment, Playa del Rey Harbor, Venice, ENG-04-353-60-5. $3,750,000.

† **ALASKA**—BA 9/15—Bureau P. Rds., Dpt. Commerce, Federal Bldg., Juneau,
grading, draining and crushed aggregate surf. between Savage and Sanctuary Rivers, McKinley National Park Rd. and dust palliative treatment from Savage River to Alaska Railroad crossing Proj. NP 1-A4-81. CD 4/10/58.

Calif., Los Angeles—BA 9/23—City, City Hall, sewers and street imprvs., Eddy St. and Yolanda Ave. Imp. Dist. $90,000. L. A. Pardee, c/o owner, engr. CD 4/8/55.

BUILDINGS—BA

Wash., Seattle—SCHOOL—BA 9/10—Shoreline School Dist. E. 158 St. and 20 Ave. N.E., 38,500 sq. ft. masonry Aldercrest elementary school, $450,000. Plans deposit $25. Steinhart, Theriault & Anderson, 1264 Eastlake Ave., archts. CD 2/24.

Calif., Torrance—SCHOOL—BA 9/11—Torrance Unified School Dist., 2335 Plaza del Amo, 30,345 sq. ft. rein.-brick Towers Elementary School, $506,000. Roy Donley, 8320 Melrose Ave., Los Angeles, Calif., archt. CD 7/9.

▲ **Calif., Oceanside**—HOSPITAL—BA 9/17—Tri-City Hospital Dist., 580 Elm Ave., Carlsbad, 3 story, rein.-con. hospital, $1,500,000. CD 3/25.

Calif., Lompoc—SCHOOL—BA 9/22—Lompoc School Dist., frame and stucco Northeast Elementary School, $400,000. Pierre Clayssens, 11941 Wilshire Blvd., Los Angeles, Calif., archt. CD 6/6/58.

† **Calif., Sunnyvale**—DEVELOPMENT CONTROL CENTER—BA 10/1—U. S. Eng., 180 New Montgomery St., San Francisco, development control center addn. Increment 2, ENG-04-203-60-98.

▲ **Calif., Los Angeles**—PLANT AND LAUNDRY—BA 10/14—Bd. Supvrs., Los Angeles Co., 501 Hall of Records, central heating and refrigeration plant and laundry, Harbor General Hospital, Torrance, $2,246,952. CD 1/23/57.

HEAVY CONSTRUCTION—LB & CA

CALIFORNIA—State Div. Hys., 1120 N. St., Sacramento, **Griffith Co.**, 1060 S. Broadway, Los Angeles, Calif., CA $607,627, grading, paving to widen 1.9 mi. Oak St. from 2 to 4 lanes between Brundage Lane and 24th St., in and adjacent to Bakersfield, widening to provide short section of 4 lane divided hy. 24th St. at intersection with Oak St., modifying channelization and widening to 4 lanes Oak St. overpass over Atchison, Topeka and Santa Fe R.R. freight yard, Kern Co., Bids Aug. 5, awarded Aug. 21. CD 8/12, under LB.

Stolte, Inc., 8451 San Leandro St., Oakland, Calif., LB $945,090 (4 bidders), Camino-Folsom 230 KV double circuit transmission line, Upper American River Proj., El Dorado Co., Inv. 2211, SACRAMENTO, CALIF., Sacramento Municipal Utility Dist., 1708 59th St., Sacramento, Calif. Bids Aug. 20. CD 7/23.

Western Contrg. Corp., 400 Benson Bldg., Sioux City, Iowa, LB $898,875, dredging addnl. 4,000,000 yds., Mission Bay, Crescent Bay and East Bay, SAN DIEGO, CALIF., City, 1200 Pacific Hy., San Diego, Calif., awarded Aug. 14.

BUILDINGS—LB & CA

▲† **Peter Kiewit Sons' Co.**, 1300 Alpha St., Seattle, Wash., CA $1,261,790, DORMITORY and MESS FACILITIES, phase 1, for Air Force Support Facility, Inc. 60-2, FORT GREELEY, ALASKA, U. S. Eng., P.O. Box 7002, Anchorage, Alaska. Bids Aug. 18. CD 8/24, under LB.

▲ **Robert L. Wilson Co.**, 850-24th St., Oakland, Calif., CA $1,063,250, 13,000 sq. ft. steel frame, CYCLOTRON BLDG., No. 88, incl. Shops, Labs. Offices, BERKELEY, CALIF., Bd. Regents, University of California, 2 Barrow Lane, Berkeley, Calif. Bids Aug. 4. CD 8/10, under LB.

▲ **Rothschuld-Raffin & Weirick**, 875 Sansome St., San Francisco, Calif., CA $3,038,700, 1 and partial 2 story, 165,000 sq. ft. rein.-con. HIGH SCHOOL, Hillsborough, SAN MATEO, CALIF., San Mateo Union High School Dist., 650 N. Delaware St., San Mateo, Calif. Bids July 9. CD 7/15, under LB.

▲ **Pacific Constr. Co.**, 2826 Kalihikapua, Honolulu, Hawaii, LB $1,432,400 (5 bidders), 156 units each APARTMENTS, HONOLULU, HAWAII, Hawaii Housing Auth., 1002 N. School St., Honolulu, Hawaii. Bert Lemon & Lo, Kenrock Bldg., Honolulu, Hawaii, archts. Bids Aug. 20. CD 7/20.

▲ **Tolboe & Harlin Constr. Co.**, 4091 S. Main St., Salt Lake City, Utah, LB $2,877,319, 299 APARTMENTS for Married Student Housing, University of Utah, SALT LAKE CITY, UTAH, Utah State Bldg. Bd., 419 State Capitol, Salt Lake City, Utah, Scott & Beecher, Dooly Bldg., Salt Lake City, Utah, archts. CD 10/8/57.

▲ **J. H. Sellen Constr. Co.**, 228 9 Ave. N., Seattle, Wash., CA est. $1,000,000, 3 story, 53,000 sq. ft., steel frame, air conditioned OFFICE, SEATTLE, WASH., Bethlehem Pacific Coast Steel Corp., 4001 28 Ave. S.W., Seattle, Wash. Bids July 8. CD 7/1.

▲ **A. G. Homann**, Lacey, Wash., CA est. $1,880,000, 3 story, 60x80 ft., steel frame and rein.-conc. BREWERY addn., 25,000 sq. ft. warehouse addn., TUMWATER, WASH., Olympia Brewing Co., Tumwater, Wash. CD 1/30.

CANADA

HEAVY CONSTRUCTION—BA

▲ **Ont., London**—BA 9/21—City, City Hall, storm relief sewers, contracts A and B, $1,500,000. Plans deposit $25. James F. MacLaren Assocs., 321 Bloor St. E., Toronto, engrs. CD 8/1/56.

BUILDINGS—BA

Ont., Ottawa—SCHOOL—BA 9/15—The Collegiate Institute Bd. of Ottawa, 180 Bay St., rein.-con., structural steel, brick, Woodroffe High School, $600,000. Plans deposit $100. Hazelgrove, Lithwick & Lambert, 505 Laurier Ave. W., archts. CD 11/24.

Ont., Peterborough—HOSPITAL—BA 9/18—Peterborough Civic Hospital Bd., 5 story, 56x170 ft. rein.-con. nospital wing, 4 story, 33x46 ft. extension, 2 story laboratory and supply room, $500,000. Plans deposit $100. Craig & Zeidler, 147 Hunter St. W., archts. CD 12/13/48.

▲ **Alta., Edmonton**—GARAGE—BA 9/21—City, City Hall, 1 story, 132,000 sq. ft. Transit System Garage, $1,500,000. Plans deposit $100; plumbing, heating, ventilating for Edmonton Transit System garage. Plans deposit $25; electrical work for Edmonton Transit System Garage. Plans deposit $25. City Architect, City Hall, archt. CD 4/2.

HEAVY CONSTRUCTION—LB & CA

▲ **BRITISH COLUMBIA**—B. C. Govt., Parliament Bldgs., Victoria,
Perini Pacific Ltd., 475 Howe St., Vancouver, B. C., CA $7,295,584, fdns. and substructure for Port Mann Bridge, two main supporting piers, two anchor piers, 28 approach bents which support girders, Port Mann. Bids June 26. CD 7/16, under LB.

BUILDINGS—LB & CA

▲ **Canadian Bechtel Ltd.**, 25 King St. W., Toronto, Ont., CA Est. $4,000,000, design and construct OIL REFINERY, offices, plant laboratory, administration, warehouses, Main Highway, Calgary and Edmonton, RED DEER, ALTA., Canadian Oil Companies Ltd., 188 University Ave., Toronto, Ont.

▲ **Atlas Constr. Co. Ltd.**, 4781 St. Catherine St. W., Montreal, Que., CA Est. $3,000,000, Bomarc Missile base, steel, rein.-con. BARNS, housing one missile built above and below ground, slit roof for launching, NORTH BAY, ONT., Dpt. National Defence, 125 Elgin St., Ottawa, Ont.

▲ **Thomas G. Fuller Constr. Co., Ltd.**, 199 Carling Ave., Ottawa, Ont., Owner Builds, $3,000,000, 11 story, rein.-con., masonry, glass OFFICE, Albert St., OTTAWA, ONT., Balharrie, Helmer & Morin, 77 Metcalfe St., Ottawa, Ont., archts.

▲ **Queensview Constr. & Development**, 525 Bank St., Ottawa, Ont., Owner Builds, $1,800,000, 11 story, 125 x 148 ft., 180 suite, concrete, masonry APARTMENT, Block 20, Rideau Terrace, OTTAWA, ONT., G. E. Bemi, 441 Bank St., Ottawa, Ont., archt.

PUERTO RICO

HEAVY CONSTRUCTION—BA

† **Puerto Rico**—GUIDED MISSILE ASSEMBLY FACILITY—BA on or about 10/1—U. S. Eng., Stop 7½, Fernandez Juncos Ave., San Juan, combined guided missile assembly facility, Ramey Air Force Base, Eng.-08-123-60-10.

HEAVY CONSTRUCTION—LB & CA

PUERTO RICO—P. Wks. Dpt., Stop 22, San Juan, Bids opened 8/25.
Rexach Constr. Corp., San Jose & Segarra, Urb. Bechara, San Juan, P. R., LB $524,874, 4.884 kms state hy. No. 110 between Moca-Aguada, Cecilio Dejado, ch. engr. CD 10/17/55.

AMERICANS ABROAD

HEAVY CONSTRUCTION—LB & CA

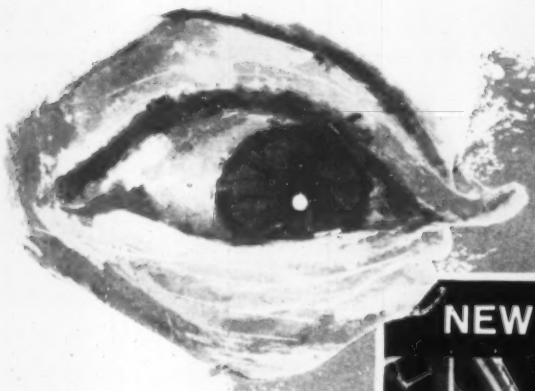
† **N. V. Grasso's Koninklijke Machine Fabrieken**, Hertogenbosch, The Netherlands, CA water chilling units, cooling tower, chip ice conveyor with accessories, spare parts for Yanhee Multipurpose Proj., THAILAND, Royal Irrigation Dpt. of Kingdom of Thailand, Bangkok, Thailand, Thai Liason Engineer, c/o Engineering Consultants, 1940 West Mississippi St., Denver, Colo., U.S.A., engrs. Bids May 28. CD 3/23.

FOREIGN

HEAVY CONSTRUCTION—BA

▲ **Ghana, Accra**—BROADCASTING FACILITIES—BA 9/29—Permanent Secretary of the Ministry of Education and Information, Accra, supply and constr. external broadcasting facilities $3,000,000.

LOOK *at a floor treatment that cures, hardens, seals*



Plant designed and built by Kaiser Engineering Co.

Hugh Fulton, Project Engineer for Kaiser.

William A. Leadlein, Supervisor for Westinghouse.

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The new Westinghouse Plant at Trafford, Pa., covers 260,000 Sq. Ft. Its floor was protected with a modern, simplified treatment: Cured, hardened and sealed with a single application of WEST CONCRETE FLOOR TREATMENT.

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WEST CONCRETE FLOOR TREATMENT is a quick drying formulation. Even spreading. Easily applied by unskilled labor. It enables newly-laid wet concrete to retain 95% of its moisture. This permits curing and hardening while sealing and dustproofing. Meets ASTM Specification C-309.

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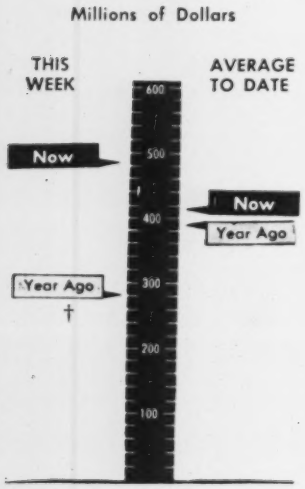
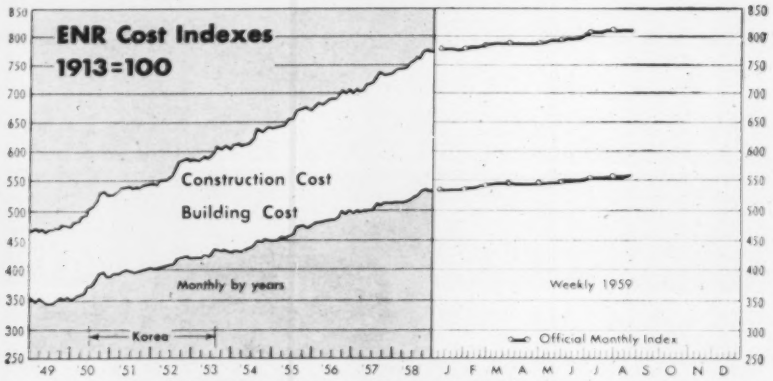
CONTRACTS ...





CURRENT COST INDEXES

	Week of Aug. 27 1959	% Change from July 30 1959	% Change from Aug. 28 1958
ENR INDEXES (1913=100), 20-cities' average			
Construction Cost	811.79	+0.08	+4.95
Building Cost	555.77	+0.26	+3.88

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

AMOUNT OF CONTRACTS LET

	This Week	Cum. 36 wks 1959	Chge '58-'59 %
	millions		
All Heavy Constr.	$490.1	$14,815.2	+ 6
By Ownership			
PRIVATE	332.8	7,306.1	+26
PUBLIC	157.3	7,509.1	− 9
State & Municipal	139.8	5,413.2	− 9
Federal	17.5	2,095.9	− 9
By Type of Work			
PUBLIC			
Waterworks	2.9	298.2	+33
Sewerage	10.8	466.3	+ 7
Bridges*	8.4	555.4	+10
Highways	56.7	2,193.7	− 8
Earthworks, Dams & Waterways	5.7	659.7	−16
Buildings:			
Excl. Housing	45.9	1,870.2	− 1
Housing	4.8	473.3	−48
Unclassified	22.1	999.7	− 9
PRIVATE			
Buildings:			
Mass Housing	114.6	3,264.8	+18
Commercial	29.9	1,601.4	+17
Industrial	183.8	2,069.8	+58
Unclassified	4.5	362.7	+12

* Includes private bridges. † 4-day week.

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

CAPITAL . . .

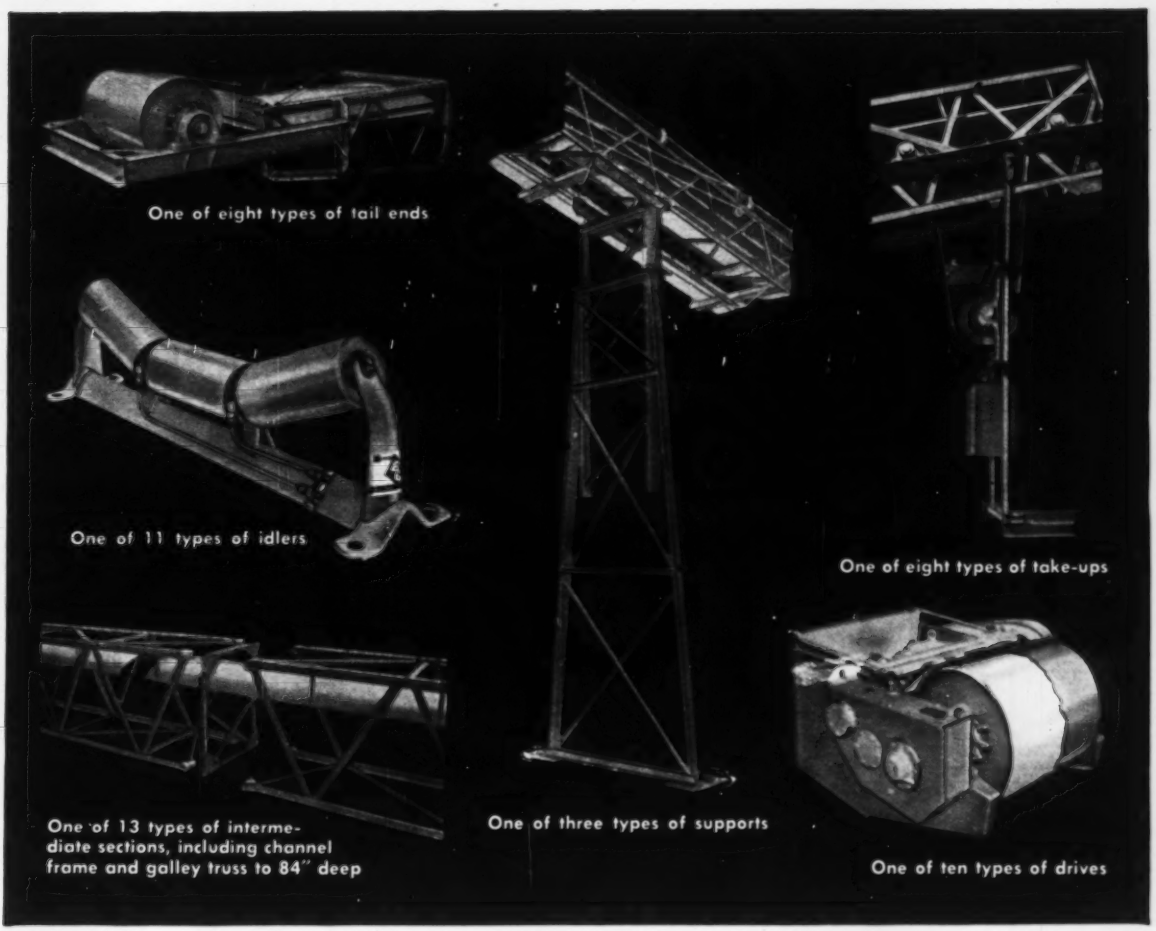
New Capital For Construction	Week of Aug. 27	Cum. 35 wks 1959	Chge '58-'59 %
	millions		
Corporate Securities	$120.3	$2,605.1	−32
State and Municipal:			
All Except Housing	99.9	1,295.9	− 2
Housing		75.2	+122
Federal Loans	0.7	96.0	−31
Federal Aid		2,858.0	+1,222
Total Nonfederal	$220.9	$9,929.2	+16
Federal Appropriations:			
Projects in U. S.	$78.0	$423.5	−89
Outside U. S.		4.1	−66
Total New Capital	$298.9	$10,357.2	−17

STATE AND MUNICIPAL BOND SALES

	1959 Aug.	1959 8-Mos.	Percent Change from 1958 Aug.	Percent Change from 1958 8-Mos.
	(millions)			
All Construction	$487.2	$4,382.5	+ 44.8	− 0.6
Buildings	142.5	1,673.4	− 15.8	− 7.4
Schools	127.1	1,106.1	− 11.1	−13.9
Housing		76.8	0	+127.0
Other buildings	15.4	490.5	− 41.3	+ 0.5
Heavy Construction	344.7	2,709.1	+106.0	+ 4.2
Waterworks	19.2	396.7	− 20.6	+34.5
Sewerage	44.8	315.4	+ 37.4	+ 0.7
Bridges	66.0	86.9	+6,546.5	+225.0
Highways	120.3	451.1	+181.8	−43.2
Earthwork, dams, waterways	0.4	726.8	− 53.6	+91.6
Unclassified	94.0	732.2	+ 42.6	− 7.5
Electric and gas utilities	5.2	87.8	− 76.7	−51.0
Airports	7.8	179.0	− 51.3	+155.2
Parking facilities	1.8	20.1	+ 3.0	+25.0
Other	79.2	445.3	+206.7	+18.1

CONSTRUCTION MACHINERY PRICE INDEXES

Manufacturers Prices, 1947–49=100—BLS	July 1959	Percent Change from last Month	Percent Change from last Year
All Types	172.1	+0.1	+ 4.0
Cranes, Draglines, Shovels	168.6	+0.1	+ 2.9
Shovel, ¾ cu yd	172.5	0	+ 2.9
Shovel, 1—1½ cu yd	181.9	+0.7	+ 2.0
Shovel, 2—2½ cu yd	162.1	0	+ 5.0
Crane, truck mounted	165.7	0	+ 0.9
Scrapers and Graders	165.7	0	+ 4.3
Scraper, 4 Wheel, 12–15 cu yd	156.8	0	+ 3.6
Grader, heavy duty	172.6	0	+ 5.2
Tractors (non-farm; incl. industrial)	188.2	+0.2	+ 4.3
Wheel-type, off-highway (January 1955=100)	128.2	0	− 0.2
Crawler type, 100–154 dbp	191.3	0	+ 2.5
Machinery, Tractor Mounted	168.6	0	+ 4.3
Dozer, hydraulic control	186.6	0	+ 5.2
Loader, shovel type	161.5	0	+ 5.0
Specialized Machinery	155.7	+0.3	+ 3.3
Ditcher	156.6	0	+ 1.6
Roller, tandem	209.8	0	+ 8.6
Roller, 3 wheels	174.9	0	+ 8.2
Portable Air Compressors	167.5	0	+ 5.3
Contractors Air Tools	181.6	0	+10.3
Mixers, Pavers, Spreaders	156.2	−0.1	+ 4.1
Mixer, truck, 6 cu yd	131.1	0	+ 3.0
Mixer, paving, 34 cu ft	193.5	0	+ 4.5
Bituminous paver	162.6	0	+ 6.3


One of eight types of tail ends
One of 11 types of idlers
One of 13 types of intermediate sections, including channel frame and galley truss to 84" deep
One of three types of supports
One of eight types of take-ups
One of ten types of drives

Pictured here are just a few of the many Barber-Greene standardized conveyor components. Each is available in a wide variety of types and sizes, with unmatched flexibility for countless ways of assembly. Write for new bulletin.

Boost conveyor efficiency and cut costs with Barber-Greene standardized components

Every year, more and more belt conveyor installations — long and short, simple and complex — are made up of Barber-Greene standardized, "packaged" components. This standardization means fast, off-the-shelf delivery . . . almost limitless combinations of assembly that cut time and costs on any bulk material handling job . . . components completely interchangeable . . . spare parts readily available . . . simple selection and pricing right from the catalog. Light or heavy, Barber-Greene has the complete conveyor installation you need.

You save these six ways:

- You save special engineering time and expense.
- You save delivery time.
- You save erection time and expense.
- You save on alignment.
- You save on replacement costs.
- You save down time.

58-34-PE

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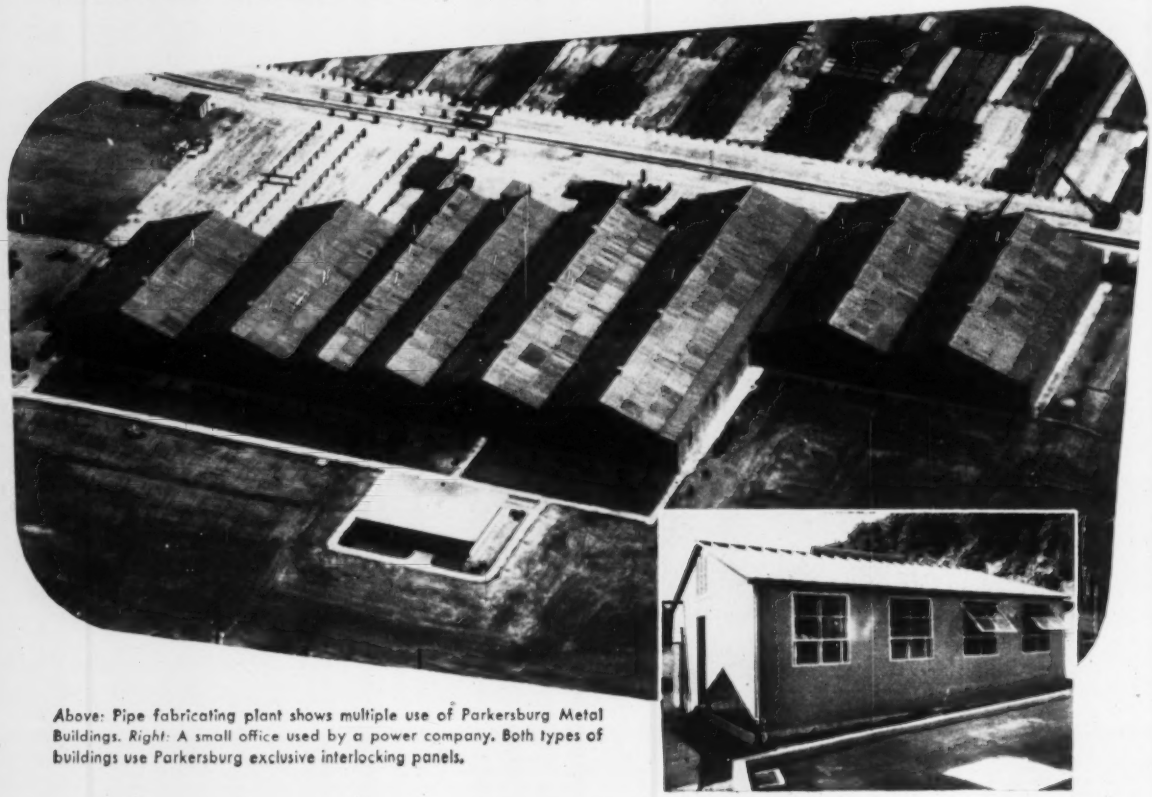

Above: Pipe fabricating plant shows multiple use of Parkersburg Metal Buildings. *Right:* A small office used by a power company. Both types of buildings use Parkersburg exclusive interlocking panels.

Build exactly what you want... fast!

Versatility—that's the word for Parkersburg. And that's why you get exactly the building you need without compromise when you specify Parkersburg. It is the newest, broadest, most flexible metal building line on the market today.

And you get a high quality permanent building delivered and erected exactly when you want it—thanks to the most modern, precision mass production facilities in the industry.

For a tool shed or a multiple unit factory, an eye-appealing supermarket or a maximum utility warehouse, get the Parkersburg Plan. It will help you cut financing costs, erection costs and maintenance costs.

Just look in the yellow pages for your nearby Parkersburg Dealer-Erector or sales office, or write for Data Book BD-859-5.

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BUILDING DIVISION • THE PARKERSBURG RIG & REEL COMPANY • PARKERSBURG, WEST VIRGINIA

Spotlight on 'Backdoor' Financing

- **Getting U. S. money without going through the regular appropriations process each year is a long-established political art.**

- **Many construction programs are financed that way. But now there's a major effort in Washington to close the door.**

"Backdoor" financing has become a political epithet in Washington. To the Republican minority in Congress, it is a blanket to be thrown over programs the Administration opposes.

Just what is this sinister sounding "backdoor financing" that arouses such emotion? What is it intended to do? Those are questions of vital importance to construction people.

The so-called backdoor method has become the standard method by which many federal-aid construction programs are financed. This holds true whether it concerns a sewage disposal project in Dubuque or a hydroelectric dam in Asia built with foreign aid funds.

Simply stated, backdoor financing is the avoidance of the regular appropriations process of Congress. Instead, new programs are voted that commit the Congress and the Treasury to spend money without review by the Appropriations Committee.

Backdoor financing of one form or another has a long history. For example, during the 1830's the Treasury helped finance public improvements—roads and canals—by distributing surplus Treasury funds to the states. In another sense, the great railroads that link East and West were spurred to expansion through federal land grants.

But the modern phase started, like so many other programs, during the great depression of the 1930's. It was a Republican President Herbert Hoover, who first opened the door in 1932 with establishment of the Reconstruction Finance Corp. And it was a Democrat who first blasted the financing method, coining the term that Republicans today use as a weapon. Originator was Rep. J. Vaughan Gary of Virginia.

In all, some $26 billion in federal funds were hustled out the "backdoor" of the Treasury to RFC during its lifetime. This method was originally chosen because of the huge deficits facing the government and the haste to get something done to bail out banks and businesses faced with collapse.

Since then, this backdoor to the Treasury has been opened wide. More than $125 billion has been authorized for various programs—mainly in construction, foreign aid and farming.

Now the Administration and Congressional conservatives, alarmed at the spreading use of this method, have launched a major fight to slam the backdoor shut.

Backdoor financing as a political issue now becomes a potent new club in the hands of opponents of many construction programs.

There are two methods for backdoor financing. One is through so-called "public debt transactions"; the other other through contract authorizations.

In the strict sense of the term, public debt transactions are considered true backdoor financing. The programs listed in the table below are carried out by this method. They have accounted for some $150 billion in federal financing since RFC days.

Out the Backdoor

(in millions)

Fannie Mae	
Secondary Market	$2,182
Special Assistance	1,350
Preferred Stock	65
HHFA	
College Housing	311
Flood Insurance	500
Public Facility Loans	61
Urban Renewal	902
Public Housing Adm.	1,471
REA	1,152
St. Lawrence Seaway	27
Farm Programs	
Farmers Home Adm.	200
Farm Housing Loans	297
Federal Farm Mort. Corp.	1,000
Federal Civil Defense	249
VA Home Loans	100
Int'l Bank for Reconstruction and Development	5,715
Export-Import Bank	4,078
Commodity Credit Corp.	4,036
Federal Deposit Ins. Corp.	3,000
Others	1,048
TOTAL	$27,744

(Available for use as of July 31, 1959)

They work this way: Congress authorizes the Administration to set up loan funds for the programs to be financed out of the Treasury. The funds loaned out are to be repaid, many with interest. Many of the funds are revolving, so the money is loaned out over and over. Most housing programs are financed through loans.

The contract authorization method is usually considered as backdoor financing. Many grants-in-aid programs are handled this way for construction of hospitals, sewerage and water pollution projects, highways and airports.

Congress authorizes the Administration to enter into contracts with state and local communities and contractors for construction of such projects.

When such a program gets under way, the bill is submitted to the government. But it may not appear for several years after Congress approves the initial authorization. The Administration in its budget requests each year estimates how much will have to be paid in the coming 12 months.

Opponents contend that Congress has no choice or say in the matter at this late stage and must automatically hand over the funds to honor government commitments.

They also argue that the backdoor route makes for disorderly handling of government finances. And the impression is left that there is something, if not dishonest, at least recklessly wasteful about the operation.

But the issue cuts much deeper than this. It goes to the heart of the Congressional process and the jockeying for power between the legislative committees and the powerful appropriations committees. It is intimately bound up with Mr. Eisenhower's budget, inflation and debt management fights with Democrats. It is also a diversionary smokescreen thrown up by opponents of the programs proposed.

Backdoor financing programs approved by Congress each year account for only a small part of total spending legislation passed. Various officials figure these financing programs have

Automatic hydraulic self-leveling bucket gives the operator a clear view with the International Wagner loader —unobstructed by cumbersome mechanical linkages. Big, ⅝-cu yd bucket is 64 inches wide, has 3,500-lb capacity. Notice how unsightly external hose connections are eliminated by T-340 internal pump design.

New International Drott Four-in-One. Only the new T-340 offers this versatile, high-production unit in the utility crawler field! Left below, showing exclusive clamshell action for "surrounding" materials, or dozing close to green foundations without excessive ground pressure. Right, bottom-dump action provides 9 ft, 6-inch under-bucket clearance. Also, use the Four-in-One as a regular bucket with ¾ cu yd (SAE struck) capacity; a scraper for inch-close grading accuracy; or a bulldozer with adjustable, radius-controlled moldboard for live, earth-rolling action. Parallelogram linkage holds bucket level from ground level to dump height.

already, they're calling it the "terrific" T-340

New 45 hp* International Crawler leads its field in *POWER · SPEEDS · STEERING · EQUIPMENT!*

Reports from new T-340 users express amazement at its capacity . . . *its push and pull power*, compared with what they expected from a 31 drawbar hp rating. But when you measure the T-340 against its field, you see the reasons!

- **A quiet, smooth-running, 4-cylinder engine** with a proven pedigree for stamina and fuel economy.
- **Characteristic IH power-weight ratio,** delivering 95 per cent of the T-340's *built-in* operating weight of 5,600 lb as pull at the drawbar.
- **Job-matched speeds.** Only the T-340 in its power class offers Torque Amplifier Drive—providing *two* speeds in each of the five regular gears, letting you boost pull power up to 45 per cent, *on-the-go*, without declutching. Or, equip the T-340 with Fast Reverser, giving you *five reverse speeds*, each 22 per cent faster than the corresponding forward gear speed.
- **High-capacity, internal hydraulic pump,** gives instant-quick, fast-cycle equipment control.
- **Exclusive new planetary steering and final drive** —quick, easy pivot or "feathered" turns.

**Maximum flywheel hp*

Measure the new T-340 by either price or performance . . . you'll quickly see why it's easily today's top value in the utility tractor field. See it *soon!*

Ask your IH Dealer to demonstrate . . . see for yourself how smooth, 4-cylinder power, planetary-type steering, balanced power-weight ratio and other features put the T-340 at the head of its class! For name of the IH dealer nearby, and descriptive literature, write International Harvester Company, Dept. AB-9, P. O. Box 7333, Chicago 80, Illinois, *today*.

See Your
INTERNATIONAL HARVESTER Dealer

International Harvester Products *pay for themselves in use* —Farm Tractors and Equipment . . . Twine . . . Industrial Tractors and Equipment . . . Motor Trucks . . . Construction Equipment—General Office, Chicago 1, Illinois.

New International hydraulic bullgrader, is raised, lowered, tilted, and angled to right or left—all with fingertip hydraulic control. Blade is 85-inches wide and 25 inches high, plus a 7-inch center spillboard. Can be used in combination with scarifier, winch, and other rear-mounted equipment.

International Wagner Loader and backhoe can be mounted separately or in combination to form a highly efficient trenching, backfilling, and loading unit. Backhoe can be equipped with regular, mole's paw, bell hole, cemetery, or heavy-duty street repair bucket.

averaged anywhere between $3.5 billion and $4 billion a year since World War II. In contrast, total appropriations requested by the Administration for this fiscal year alone amount to $77 billion.

Critics contend that once such a program is set up, Congress loses control over its future operations. They charge this is handing over Congress' power of the purse strings.

The big fight didn't really start until last year in the House of Representatives. It wasn't, however, until the issue moved into the Senate this year that it was really catapulted, almost accidentally, into the spotlight.

Sparking the opposition in the House was the passage of anti-recession legislation in 1958 and the fear that this technique would spread.

Leading the fight in the House was a group of conservatives including Rep. Gary, Chairman Howard W. Smith (D., Va.) of the Rules Committee, and Reps. Clarence Cannon (D., Mo.) and John Taber (R., N. Y.)—the latter two, ranking members of Appropriations.

Their reasons for opposing backdoor financing were mixed. Mr. Smith opposes most of the programs as such. He feels that if they were steered through the appropriations committees, they could be cut down; maybe some eliminated.

Others in the group were concerned over the threat to the power of the Appropriations Committee. These committees hold enormous power in Congress because other Congressional committees as well as the executive agencies have to obtain most of the money for their programs from them.

If the appropriations committees can be sidestepped, their power is reduced and the power of other Congressional committees increased. It also allows other committees to get through pet programs that might be cut down by appropriations committees.

The issue also pits the House against the Senate. The House initiates all normal appropriations bills. But under backdoor financing, the Senate can initiate legislation.

The conservative House group started laying its plans last year to get a big anti-backdoor drive under way this session., enlisting support of Treasury Secretary Robert B. Anderson.

Rep. Gary kicked off the fight early this year when the first money bill of the session, the Veterans Housing Act, came up for House floor debate. The target was not the veterans bill itself, but the $2.6-billion housing bill, which had just been cleared by a Senate housing subcommittee.

Rep. Gary's speech touched off weeks of debate that culminated in the introduction by Rep. Smith of a resolution calling for all such bills henceforth to be shuttled through the Appropriations.

The Senate got around to it later. But then the issue took on a new twist that turned it into a national issue.

Senate Majority Leader Lyndon Johnson (D., Tex.) unwittingly set up the issue for Republicans.

Senator Johnson, stung by criticism that the Democrats were "wild spenders," produced a series of tables showing that the Democratic-controlled Congress had cut Mr. Eisenhower's appropriations requests by $10 billion since 1955.

Republican Leader Everett Dirksen (D., Ill) broke in several times to twit Senator Johnson. "What about the backdoor?" Mr. Dirksen asked jovially with a shake of his finger. With that, the issue became a political slogan.

Senator Dirksen tied it in directly to Mr. Eisenhower's budget fight.

It had the effect of pinning the spending label more securely to Democrats despite all their squirming to get out from under it.

Republicans could show that though Democrats were claiming to cut something like $600 million from the President's budget, they had increased spending by approximately the same amount by way of backdoor financing.

The government's budget managers are not opposed to backdoor financing ventures that are "sound, businesslike enterprises" that have a source of income to assure their repayment with interest. Under this heading are the secondary market operations of the Federal National Mortgage Association and the Home Loan Bank Board.

But they feel the method is being used for too many dubious ventures.

One key reason for Treasury backing of the backdoor financing opponents is its debt management programs. Many of the programs call for low rates of interest on Treasury loans, such as Rural Electrification Administration programs. But to secure funds, the Treasury has to go into the market and borrow the money at higher rates.

Agitation against backdoor spending is increasing. But any sweeping change such as proposed in Rep. Smith's resolution to funnel all money legislation through the Appropriations Committee is getting a cool reception.

The backdoor method of financing has become too entrenched to change with the stroke of a pen.

However, the struggle will have an indirect impact in attempts to scale down the funds going into programs financed by the backdoor; and it may block attempts to finance other programs by the backdoor.

Price Fixing Charged

Materials producers kept road costs up, U. S. says

A trade association and 17 companies selling roadbuilding materials in New England are under federal indictment for conspiring to fix prices.

Antitrust Chief Robert A. Bicks says the alleged conspiracies involved more than $10 million in sales of asphalt, road tar and bituminous concrete to New England government agencies.

The three indictments returned by a federal grand jury in Boston charge that the alleged price fixing substantially increased the cost of construction, maintenance and repair of roads and highways in New England.

In the asphalt indictment, they conspired to fix prices on asphalt sold to state and local governments and grand jury charges that 10 companies contractors in Massachusetts and New Hampshire. The defendants include Lake Asphalt and Petroleum Co., East Deerfield, Mass.; Rock-Asphalt Corp., Haverhill, Mass.; Mystic Bituminous Products Co., Everett, Mass.; Wachusett Bituminous Products Co., Worcester, Mass.; American Oil Products Co., Somerville, Mass.; D. J. Cronin Asphalt, Inc., East Providence, R. I.; Koppers Co., Inc., Pittsburgh, Pa.; Allied Chemical Corp., New York City; H. H. McGuire & Co., Inc., Malden, Mass.; Trimount Bituminous Products Co., Everett, Mass.

The road tar indictment charges six companies conspired to fix prices of road tar sold to state and local governments in Massachusetts, New Hampshire, Vermont and Maine. The other companies named in this indictment are Koppers Co., Inc., Pittsburgh, Pa.; James Huggins & Son, Inc., Malden, Mass.; Coal Tar Co., Framingham, Mass.

In the third indictment, the Bituminous Concrete Association, Inc., Boston, and nine companies are charged with conspiring to fix prices of bituminous concrete sold to the State of Massachusetts and to local governments and contractors in Massachusetts and New Hampshire. The other companies named, all from Massachusetts, are Warren Bros. Roads Co., Cambridge; Essex Bituminous Concrete Corp., West Peabody; Rock-Asphalt Corp., Haverhill; Merimack Paving Corp., Groveland; Vulcan Construction Co., Boston; and Massachusetts Broken Stone Co., Weston.

Each of the companies could be fined up to $50,000 on each charge.

(*B&F continued p. 96*)

Top money-maker on big-volume jobs — that's the 360-hp B Tournapull with 28-yd Fullpak scraper. Weight tests taken throughout the country prove the "Big B" hauls more of its rated capacity than any other competitive scraper.

They're buying the BIG ones!

NOW, as never before, contractors are up-grading their earthmoving fleets with *big* high-speed self-propelled scrapers. And no wonder — with the demand for faster completion of highways — there are *more* big-yardage, *big-profit* jobs available.

And the LeTourneau-Westinghouse 360-hp B Tournapull® with 28-yd Fullpak® scraper is the machine that gives contractors more of everything they want . . . excellent production, dependability, maneuverability . . . ease of operation . . . and low-maintenance costs.

The Big B 'Pull* gives you all these money-making benefits because it has more high-speed dirtmoving features than any competitive unit. You get, for example, the world's fastest-loading scraper . . . the *Fullpak*. There's the LW *power-transfer differential* . . . which keeps your machine working in softest going. You get exclusive *electric controls* . . . fast-acting, easiest of all control systems to maintain. And you have a *choice of transmissions* — step gear or power shift — to match the machine to your type of work.

Visit your nearby LeTourneau-Westinghouse Distributor . . . let him give you detailed specifications on the LW "Big B". Tell him you'd like to see it in action. Call on him soon!

Another train load of B 'Pulls rolls out of the LW plant at Peoria, Ill. These 8 "B's" will put their owner — C. P. Minnaert, of Cuba City, Wisconsin — in a top competitive position on big-yardage work. The contractor who owns modern, high-production equipment is in position to complete more work on *time*, and make bigger profits.

*Trademark BP-2127-DC-1

LW

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A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

REDA SUPPLIES 21,000 GALLONS OF WATER PER HOUR

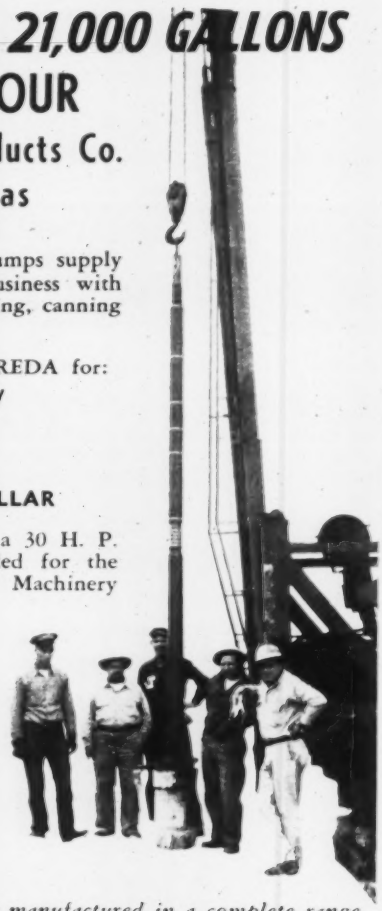
for Kimbell Food Products Co. Fort Worth, Texas

Three Reda Submergible Pumps supply this well known Ft. Worth business with plenty of water for food processing, canning and bottling operations.

The Kimbell people chose REDA for:

- **Dependable water supply**
- **Low Maintenance Cost**
- **Low Installation Cost**
- **Low Operating Cost**
- **MORE WATER PER DOLLAR**

The installation pictured is a 30 H. P. Reda unit, one of three installed for the Kimbell Company by the Well Machinery & Supply Co. of Ft. Worth.



INSTALLATION DATA:
PUMPING DEPTH: 452 ft. (water pumped to tower 110 ft. high)
CASING: 10-inch steel casing
POWER REQUIRED: 440 volts a. c., 3 phase, 60 cycle
MAXIMUM WATER REQUIREMENTS: 210,000 gallons per day
WATER SUPPLIED BY REDA: 21,000 gallons per hour
PUMPS INSTALLED: 30 H. P. Reda unit supplying 150 g.p.m.
22½ H. P. Reda unit supplying 100 g.p.m.
20 H. P. Reda unit supplying 100 g.p.m.

Reda Submergible Pumps are manufactured in a complete range of sizes from ⅓ to over 300 H. P., with capacities from 5 to over 1000 gallons per minute, from depths as great as 10,000 feet.

Contact Reda TODAY for Submergible pumps to meet your requirements!

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Manufacturers of submergible motors and pumps for over 35 years — for oil, brine and water wells, gasoline and jet fuel

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DO WE HAVE YOUR COMPLETE ADDRESS?

Not unless you included your postal zone number when moving, subscribing or renewing subscriptions.

Design Business Up

Architect-engineer firms gained volume and number

New construction design business of architect-engineers took a turn for the better last year.

Volume rose 7% to $3.6 billion, according to ENR's annual listing of firms taking on a minimum of $100,000 (estimated construction cost) in new design projects in 1958.

The number of these firms jumped 22% over 1957 to 467, while new projects booked rose 16% to 2,205. That is the largest number of firms and projects since the boom year 1955, when 496 firms with 2,572 new design projects were analyzed, valued at a record $6 billion. Of the 467 firms covered, 315—or 67%—handled over $1 million in new business during 1958.

About 70% of this architect-engineering work is in the building field. In 1958, this meant $2.5 billion of new business, a 10% gain over 1957. The number of new building projects booked rose 9% to 1,624.

A detailed breakdown of architect-engineers' new building design work points up the importance of schools, housing and shopping centers.

Last year 176 firms (mostly in the $1-million-and-over class) signed up 527 school design jobs, valued at over $500 million. Mass housing projects valued at $425 million were shared by 122 firms, covering 211 projects.

In contrast, only 53 firms signed up the 95 shopping center design jobs, valued at $302 million. Private office design jobs worth $301 million were shared by 70 firms. Industrial building projects slumped 49% in 1958, following a milder 12% drop in 1957.

Other-than-building jobs soared 42% in number and 7% in dollar value, to $1.1 billion. Highways ranked first in dollars, with most of this going to larger firms. Earthwork-dams-waterways boomed in 1958, sewerage more than doubled and airports also gained.

Petro-Chemical Designers To Operate Worldwide

Arthur G. McKee and Co. of Cleveland and Head Wrightson and Co., Thornaby-on-Tees, England, have formed an international company to design, engineer and build petroleum refineries and chemical plants.

McKee Head Wrightson, Ltd., London, which will be owned equally by the two firms, will operate everywhere except in North America.

(B&F continued p. 98)

Miller Excavating's Tournatractor levels truck-dumped fill at Indian Hills Village . . . an Omaha office bldg. development. This torque-converter tractor spread an average of 300 truck-loads of chunky clay per 9-hr shift. Says Foreman Leroy Bartlett, *"Tournatractor completes dozing jobs twice as fast as a crawler."*

Omaha firm proves rubber-tired tractors

do more work . . . save time and money

When handling a number of earthmoving jobs in-and-around a big city, or scattered over a wide area, *mobility* rates high as an equipment requirement. That's why Miller Excavating Company . . . a firm handling a wide variety of earthmoving projects around Omaha, Nebraska . . . today own two LeTourneau-Westinghouse 17.2-mph Tournatractors®.

Miller's go-anywhere LW rubber-tired tractors — which replaced 2 slow-moving crawlers — drive job-to-job over city streets and highways. The firm has no extra costs for trucks, trailers, and additional men when moving Tournatractors to new locations.

And on the job, like the two pictured, Miller's speedy LW tractors complete most assignments in less time than is normally required by a crawler tractor of comparable power.

Says Superintendent William Welch, "Tournatractor is a very maneuverable tool that gets around fast. It's hard to beat."

Costs less to buy . . . less to operate

Have you considered retiring some of your older slow-moving crawlers, and replacing them with speedy, go-anywhere, 218-hp Tournatractors? Compared with crawlers of comparable size and horsepower, this more versatile rubber-tired tractor costs less to buy, less to operate. We'll be glad to demonstrate.

Tournatractor push-loads one of Miller Excavating's 3 LeTourneau-Westinghouse C Tournapulls® on a project at the new Western Electric plant in Millard, Nebraska. Powerful tractor push-loaded 18-yd Fullpak® scrapers in an average of 45 sec. Instant-shift Tournatractor also gives these production haulers a high-speed boost out of the cut . . . reducing cycle time.

CT-2071-DCJ-1

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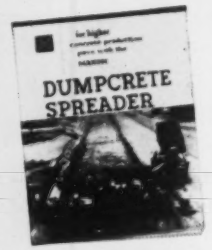

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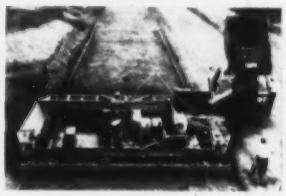

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BLU-RAY

Onward and Upward

Interest rates up more; Chesapeake job may suffer

An upward move may show up by mid-October in the Federal Reserve discount rate and the commercial bank's prime rate.

The discount rate, now 3½%, is the interest charged member commercial banks borrowing from the system's banks.

The prime rate, at 4½%, is that charged a commercial bank's biggest and best customer. From that rate, all others are scaled upwards.

Until recently chances were good that any change in the discount rate would be withheld until settlement of the steel strike. It was expected that a big rush for borrowed funds would not occur until that time. Now, with demand for capital strong and promising to grow even stronger, the change may come even before the steel strike is settled.

Commercial banks may make their move even before the Fed. Should this happen, contractors and other businessmen will feel it immediately when they borrow funds for working capital. State and local governments and corporations seeking to sell new bonds for construction will also feel the pinch, if they're not feeling it already.

Some top-rated utility and corporate bonds offered last week were less than a roaring success. General Motors Acceptance Corp. bonds, priced to yield 5%, were around a couple of days; Pacific Gas and Electric bonds, also priced to yield 5%, met only fair reception; and Houston Lighting and Power bonds were slow and sold lower than offered.

And in the municipal market, Nassau County, N. Y., general-purpose bonds sold August 12 and priced to yield 2½% to 3.85% are still sitting around on dealers' shelves. Last week, $16.1 million of the $26.2-million offering were still unsold.

All this could spell trouble for the Chesapeake Bay bridge-tunnel crossing. Its $210 million in issues of 5% and 5.7% bonds are scheduled to be offered to the public next week by the underwriting group.

But there are reports that some major institutional investors have said "no" to queries of, "Want some?"

A contract for construction of the 17½-mile crossing is in the hands of a group of four contracting companies, but it is contingent upon the sale of bonds by October 23.

ACCURACY

...to do your leveling jobs right the first time

Have you got it...?

"When other machines are following a grader in a team paving operation," says Harry Swance of Woodstock, Ontario, "the operator of that grader can't afford any mistakes." Swance knows because he frequently handles just such jobs. And his LW* grader gives him the grading accuracy to do a job right the first time.

Using the dependable controls on his LW 660 grader, Swance can set the 12′ blade to fraction-of-a-degree angles. The machine's sturdy one-piece frame, 14 tons of weight, rugged circle, and stocky lift arms, hold the blade steady for all fine-finishing. These anti-vibration advantages insure accuracy throughout every pass.

See it demonstrated

"I've had experience with Adams graders since 1939," the veteran Canadian contractor says, "and this is my fourth machine!"

Check for yourself the *accuracy* of the LW Model 660—either the standard-shift 160-hp unit or 190-hp POWER-*Flow*® with torque converter. We think it can save you money through plus-production and greater accuracy in final finishing. Your LW Distributor will be glad to arrange a no-obligation demonstration.

As lead machine in an asphalt paving team rebuilding Ont. Hwy. 10 near Orangeville, this LW 660 grader smooths gravel crown to a precise angle. On this 10-mi long project, these graders, owned by Harry Swance, worked at speeds from 2.6 to 6.7 mph, finished a mile-long section of highway every working day.

*Formerly known as the Adams grader

G-2048-DCJ-1

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State Laws Can't Be Overlooked

- **The current fight over federal labor law points up an old question: How much authority should the states have in labor legislation?**
- **Whatever happens, understanding state labor law is vital for the construction man. And it's an area often overlooked.**
- **Here's the first in a series of articles that will tell you some of the things you should be aware of . . .**

The "no-man's land" of labor law enforcement—disputes that are outside the states' jurisdictions, yet declined by the National Labor Relations Board because they're too small—may soon be inhabited. The only question is, by whom?

Under the Kennedy bill, passed by the Senate, "no-man's land" cases would be handled by state administrative agencies applying federal law. Under the Landrum-Griffin bill, passed by the House, those cases would be handled by both state agencies and courts applying any law they see fit—state, federal or common law.

The two different approaches point up the conflict of opinion on the role states should play in passing and administering labor law.

The AFL-CIO, for one, would have preferred mandatory handling of all disputes by the National Labor Relations Board. Labor's goal is uniformity, rather than different laws and interpretations in 50 states. The Kennedy provision does accommodate this goal to some extent, but Landrum-Griffin's does not.

If the Landrum-Griffin approach is adopted, of course, state labor laws will be applied more widely than ever.

Whatever the outcome, the states will continue to play an important role in the field of labor. Even as national attention focuses on federal legislation, state labor laws continue to grow and change.

All industry, whether interstate or not, is subject to state labor controls. In addition, a great part of industry is subject to federal controls under the interstate commerce clause.

Thus, employers must take into account, besides the main federal laws, state statutes and regulations. This forms a second whole series of authorities that pyramid down from state constitutions and statutes to court decisions and administrative rulings. And for the employer operating in a number of states, the problem of compliance multiplies, state by state.

State labor laws, like federal laws, generally fall in one of three categories — labor-management practices, wage-hour laws and payroll taxes.

Generally, when state and federal labor laws conflict, the state law is superseded by federal law—unless the federal law provides that the state law shall prevail.

However, federal law doesn't automatically supplant state law, even where the business concerned is properly subject to federal law. Instead, the "principle of higher standard" is often recognized. The law setting the higher standard, or more stringent curb, is the law that governs. This is notably true in the field of minimum wages, maximum hours and child labor.

Congress specifically recognized the "higher standard" theory in Section 18 of the Fair Labor Standards Act. The Taft-Hartley Act, in its regulation of union security, also recognizes this principle by yielding to state laws that ban the union shop.

State labor laws are often patterned after federal legislation, but not necessarily. In fact, states often take the lead in adopting new labor laws.

For example, labor organizations have been trying to get the federal Davis-Bacon Act amended to include prevailing fringe benefits. At present, the Davis-Bacon and related laws require payment of prevailing wages, as determined by the Secretary of Labor, on federal projects and on a number of federally assisted construction programs. California, however, recently amended its prevailing wage law to include payment of prevailing fringe benefits as well. Efforts to accomplish this at the federal level have been unsuccessful.

Another example is the regulation of labor unions. After the McClellan Committee hearings uncovered widespread racketeering in unions, several states passed stringent laws to prohibit such practices. The federal government did pass a welfare fund disclosure act last year, but it is just now considering a general reform bill.

State and federal labor laws are related in three very definite ways. State laws sometimes parallel, sometimes interlock with and sometimes go beyond federal labor legislation.

Virtually all major federal labor laws have their counterparts at the state level. The dividing line between the federal and state jurisdictions is set by the doctrine of interstate commerce. In general, those employers and employees engaged in interstate commerce, or production of goods for interstate commerce, fall within both federal and state jurisdictions. All others fall only within state jurisdictions.

A rundown of major federal labor controls quickly establishes the parallel between federal and state statutes:

- **Eight-Hour Law** requires public works contractors to pay time-and-a-half for more than eight hours work per day. At least six states have similar law for local public works.
- **Davis-Bacon Act** requires contractors on public works projects over $2,000 to pay the prevailing rate of wages, as determined by the Secretary of Labor. No less than 40 states have similar laws for local public projects, with rates determined by state labor commissioners or the awarding agency.
- **Taft-Hartley**, the Labor Management Relations Act of 1947, regulates employer and union practices, and sets up machinery for settlement of labor disputes. At least 13 states have adopted "Little Taft-Hartley" Acts. All other states have some statutes paralleling parts of the Taft-Hartley Act.
- **Fair Labor Standards Act** (Wage-Hour Law) requires employers who are engaged in interstate commerce to pay a minimum wage of $1 per hour and time-and-a-half for more than 40 hours per week. At the state level, 12 states set a minimum wage for em-

Earns extra profits on any size job

The LeTourneau-Westinghouse D Tournapull* with 9-yd scraper is large enough and fast enough for profitable use in any size production fleet. And you will find it really "shines" on those scattered small-yardage and odds-and-ends jobs — where a machine's mobility and maneuverability pay off.

This D Tournapull makes a continuous 180° turn in an area only 24'3" wide . . . can work in your restricted areas where other equipment cannot easily maneuver. It can self-load close to its struck capacity, or in production earthmoving it can be push-loaded. What's more, equipped with the LW power-transfer differential, the D 'Pull* works in wet, muddy conditions that bog down other scrapers.

Roadable without permit, the 29.5 mph "D" can "run" from one work site to the next with a minimum of lost production. This lets you eliminate permits and cost of truck-trailer transport. In addition, D Tournapull's low initial cost — only half that of many bigger scrapers — means lower interest payments, lower taxes, and lower operating costs. Result: "D" moves dirt at a *very low cost per yard.*

Reilly Brothers Construction Co. of Ossion, Iowa, finds D Tournapulls hard to beat as a cost-and-time saver. Owner Robert Reilly describes his 2 D 'Pulls as "best in their class". On the job pictured — handling shouldering and finish work on 18 miles of relocated highway — Mr. Reilly reports that the "D" hauled an average of 7 pay-yards per trip, despite wet, slippery conditions. And to get to this job site, the roadable "D's" were driven 130 miles in only 5 hours.

Now, better than ever, the 9-yd D Tournapull has many important new features including a big, powerful 143-hp engine, improved transmission with oil pump and filter, and a bigger, longer-lasting clutch. These, and many other changes . . . plus all the proven speed and power advantages that have made the "D" top money-maker in its class . . . will help you earn still bigger profits. See your LW Distributor for all the facts.

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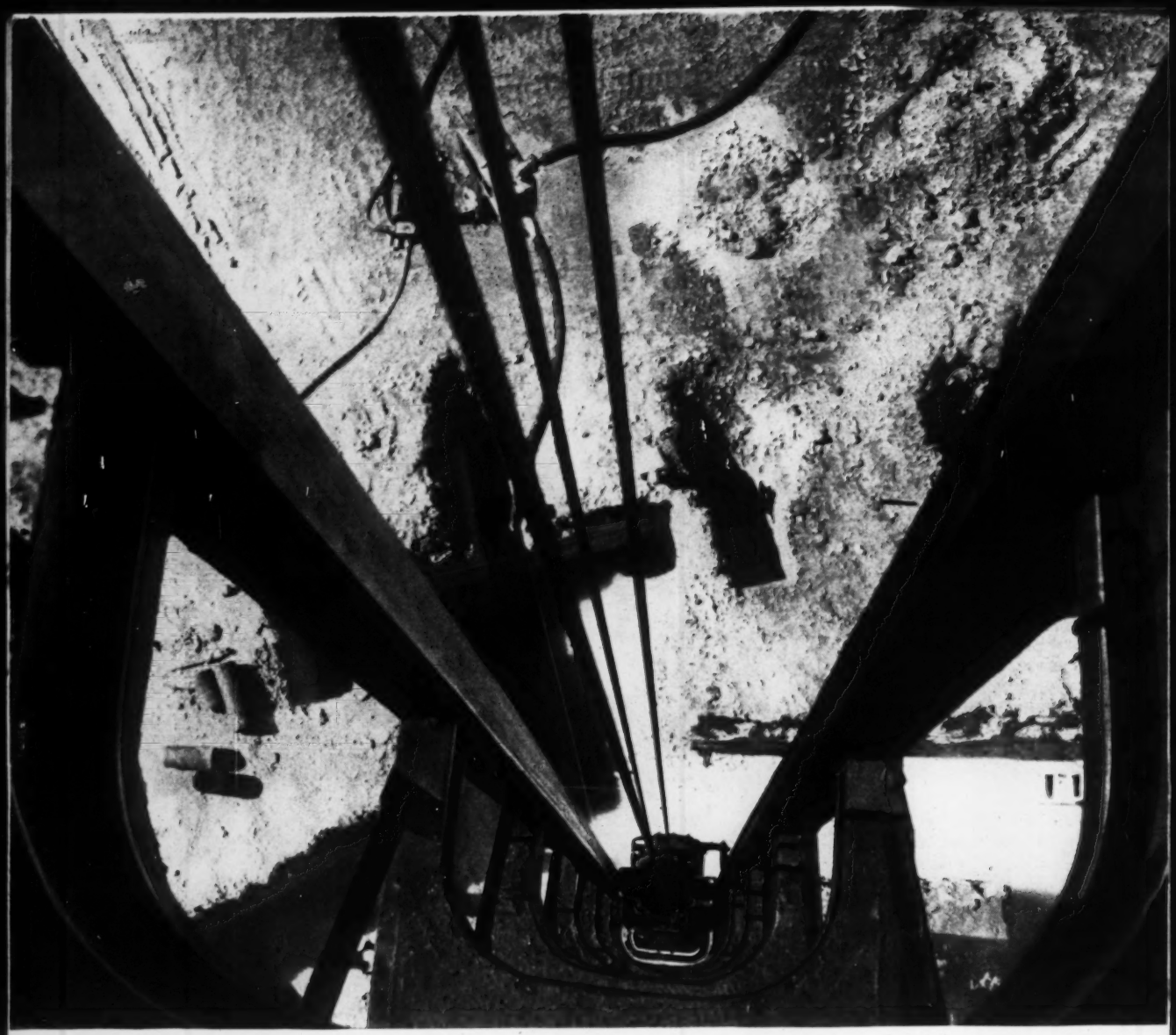

BIRD'S EYE VIEW OF RESPONSIBILITY

Driving pile foundations is just one aspect of Raymond's *single responsibility*. Of all the foundation organizations in the country only Raymond offers—and is solely responsible for—complete foundation service including soil investigation, pile manufacture, load testing and installation. When you specify Raymond foundations you receive the benefit and economy of having all the details handled expertly and efficiently by one company. On your next project, no matter how large or small it may be, employ Raymond's more than 300,000,000 man-hours of experience in providing all types of foundations. Get all the facts from the Raymond office nearest you, or write our main offices, 140 Cedar Street, New York 6, New York.

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FOUNDATIONS FOR THE STRUCTURES OF AMERICA...COMPLETE CONSTRUCTION SERVICES ABROAD

ployers within their jurisdiction. And most of the 16 states with overtime laws require time-and-a-half for more than a given number of hours per week.

• **Federal Social Security Act**, passed in 1935, imposes a tax on employers and employees for old-age insurance (Federal Insurance Contributions Act) and a tax on employers for unemployment benefits (Federal Unemployment Tax Act). Within two years, all states had enacted their own laws for unemployment and insurance benefits within the federal law's framework.

• **Executive Orders of the President** prohibit discrimination against race, creed, color or nationality on federal public works. Similar discrimination on local projects is banned in eight states.

In some cases, state and federal labor laws dovetail in such a way as to supplement one another.

An important example of this is the union shop provisions of the Federal Taft-Hartley Act. Taft-Hartley bars the closed shop but allows a union shop, which makes union membership by new employees a requirement within 30 days after being hired. However, the act also provides that the states may individually outlaw the union shop. Thus far, 19 states have adopted so-called "right-to-work" laws, which eliminate union membership as a requirement for employment.

Unemployment tax laws are another example of interlocking state and federal legislation. The Federal Unemployment Tax Act requires employers of four or more employees, who work during at least 20 weeks of the year, to pay a 3% tax on each employee's first $3,000. The tax is collected by the federal government, but administration of it is left to the state, assisted and guided by the federal government.

State labor law touches many more phases of management-employee-union relations than do key federal laws.

For example, state labor laws regulate minute items of working conditions, impose more specific limits upon hours of work and create more differentiations in wage scales than do the federal statutes. They cover everything from industrial homework to time off for voting.

State laws are generally more specific than federal laws. That's because state laws are closer to the actual level of operation and have to deal with mechanics. Federal laws often deal only with principles.

To find out exactly what your responsibilities are under the various laws, you should consult a lawyer who is familiar with labor legislation.

(Next week ENR will examine the state wage and hour laws.)

How Construction Wages Stand

Increases in Basic Hourly Rates Since January, 1950

	Cents	Percent
U. S. Steel	107.9	66.1
Building Trades	126.6	56.3
Alcoa (USW)	116.6	83.4
Sinclair Refining	99.1	53.7
General Motors	98.2	60.5
Lockheed, S. Calif.	92.2	60.0
Rubber (Firestone, Goodrich)	86.4	50.3
Anaconda Copper	84.6	60.0

Average Hourly Earnings Comparisons, May, 1959

Bituminous Coal	$3.27
Building Construction	3.17
Steel	3.10
Petroleum Refining	2.97
Tires and Tubes	2.94
Aluminum Refining	2.92
Automobiles	2.68
Aircraft	2.62
Agricultural Machinery	2.57
Copper Refining	2.33
All Manufacturing	2.23

Wages: A Comparative Analysis

The statistical material presented this month by Labor Secretary James P. Mitchell, as Presidential fact-finder in the steel dispute, is as useful to those in the construction industry as it is to those trying to settle the steel strike.

The Mitchell report assumes that no industry can conduct its wage negotiations in a vacuum. Wages, like water, tend to seek their own level—and this depends on what is happening outside the industry as well as in it. Thus what is reasonable or proper becomes a relative matter.

Are the 1959 wage increases won by construction workers, for example, too big? Is the industry's general wage level, considering the worker training and skills involved, too high? Are fringe benefits in the construction industry out of line?

To help answer such questions the Mitchell report shows these comparisons:

• **The basic hourly rates of the building trades have increased $1.26 since January, 1950.** Corresponding increase for steelworkers at Alcoa has been $1.16. For General Motors workers it has been 98 cents. The percentage increase at Alcoa has been 83.4%; it has been 66.1% at U. S. Steel and 56.3% for the building trades.

• **Gross average hourly earnings in building construction rose to $3.17 in May, 1959.** This compares to $3.27 in bituminous coal, $3.10 in steel and $2.23 for all manufacturing.

• **Union wage scales in the construction industry rose 4% (14.3 cents) in the first half of 1959.** For comparison purposes, wage settlements (exclusive of fringes) arrived at in other industries thus far in 1959 look like this:

Petroleum refining . . 13.5¢ or 5%
Pulp and paper . . . . 7.0¢ or 3.3.5%
Gas & electric util. . 10-13¢ or 4-5.5%
Cement . . . . . 10¢ or 4.5%
Chemicals . . . . . 8¢ or 3.4%
Northern textiles . . 10¢ or 7%
Anthracite mining . . 14.3¢ or 5.4%

• Annual earnings of steelworkers, who do not face the hazards of intermittent employment that construction workers do, averaged $5,350 in 1957. The average dropped to $4,840 in 1958 because of reduced production levels. About 28% of the steelworkers earned $6,000 or more in 1958, while 22% earned less than $3,600.

• The cost of fringe benefits in basic steel rose from seven cents an hour, or 8% of straight-time hourly earnings, in 1940 to 63 cents an hour, or 25% of straight-time hourly earnings, in 1957. Comparative figures for other industries:

All manufacturing . . . . . 56¢ or 29%
Chemicals . . . . . 65¢ or 35%
Machinery, electrical . . . 53¢ or 29%
Machinery, excl. electr'l. 62¢ or 29%
Petroleum refining . . . . . 90¢ or 36%
Transportation equip. . . . 66¢ or 30%

• During the postwar decade, the average annual increase in output per manhour for the economy as a whole was 3.7%, the rate for the nonfarm economy was 3.0% and that for manufacturing alone was about 3.1%.

• The prices of all commodities at wholesale advanced by 134%, comparing the first half of 1959 with the 1940 average. The consumer price index rose 107%. Steel prices rose 178%.

(Labor continued p. 104)

Labor in Brief . . .

• **Alaska strike continues**—Hope of an early settlement of the 10-week construction tie-up in Alaska dimmed last week when carpenters rejected the AGC's latest proposal: a three-year contract calling for a 30-cent increase this year, 25 cents next year, 20 cents in 1961 and arbitration of the travel allowance dispute.

• **Two disputes settled**—Building material drivers have ended a three-week strike in San Diego County, Calif., by accepting a two-year contract for a 35-cent wage increase. Operating engineers, who were also on strike, settled for a three-year, 63-cent contract.

• **U. S. sues Teer**—Labor Secretary James Mitchell has filed a suit in Durham, N. C., against Nello L. Teer Co. seeking recovery of $1,504.33 in back pay allegedly due workers.

• **New prexy**—W. A. Gray, an operating engineer, has been named president of the Arizona Building and Construction Trades Council to fill the unexpired term of the late A. E. Williams.

• **NLRB threatens labor unity**—The labor board has ruled that the no-raiding provisions of the AFL-CIO constitution cannot be used to restrict the right of workers to switch their union allegiance. It said workers have the right to choose their own union free from the dictates of the federation. Case arose at a metal-plating plant in Los Angeles.

• **A construction dilemma**—Recession unemployment and legislative changes in tax schedules have raised the average unemployment insurance tax rate in New York State to 2.02%, compared to 1.60% last year. Highest rates prevail in construction and apparel industries.

Higher Jobless Benefits Set in Several States

Several more state legislatures have opened the doors to higher payroll taxes by boosting the amount of unemployment compensation benefits payable to idled workers. Among the changes are these:

• Nebraska has increased maximum benefits from $32 to $34 a week and has extended the benefit payment period from 20 to 26 weeks.

• In Ohio, maximum weekly benefits have gone up from $33 to $42 for a single worker. Workers with dependents get an additional $5 for the first dependent, $3 for each additional dependent, making the total maximum $53.

• Oklahoma has increased its maximum benefit from $28 to $32 and has boosted its benefit period to 39 weeks.

Meanwhile, Congress has received a bill that would give District of Columbia workers a maximum weekly benefit of $40. And a governor's committee in Pennsylvania has suggested a change in that state's law to give the majority of claimants weekly benefits equal to 50% of their gross wage.

Partial Strike Is Ruled Legal

A National Labor Relations Board trial examiner has ruled that although all members of a contractor association may legally shut down their jobs when one of their members is struck, it does not necessarily follow that a strike against some rather than all of the association members is a violation of law.

If the ruling is affirmed by the NLRB, it will give unions a stronger and more disruptive hand in association bargaining and will be one more thorn in the side of multi-employer bargaining.

The question was raised by an impressive array of Arizona contractors in a labor dispute that developed last year during efforts to negotiate a legal hiring hall provision.

It had been the practice of several Arizona associations representing general contractors, building contractors, homebuilders and masonry and plastering contractors to negotiate through a joint committee with five of the building trades, which were in turn represented by a joint committee. The existing master labor agreement was reopened to make it conform to the Mountain Pacific decision on hiring practices. Negotiations between the two committees broke down.

A handful of contractors out of the several hundred contractor members of the associations were struck.

The associations charged that the strikes were illegal. They said the purpose of the strikes was to force the struck employers to negotiate individually instead of through the negotiating committee of the various associations. If so, they contended, this violated the law because it interfered with the employers' selection of their bargaining representative and because it amounted to a refusal to bargain with the employer committee.

The unions denied any intent to seek individual bargaining and said the strikes were simply an attempt to force the master employer committee to accept the unions' hiring proposals.

The trial examiner agreed. He said the evidence supported the unions' contention. He then went on to say that even in the absence of such evidence the strikes were not per se illegal.

His reasoning was this: The Taft-Hartley Act curbs the right of unions to strike only in those instances specifically enumerated, such as jurisdictional strikes, boycotts, failure to give notice of contract modification or termination, and so on. The law does not include a strike against some of the members of a multi-employer bargaining unit among its enumerations of prohibited strikes. Therefore such a strike is sanctioned by the law if the object of the strike does not otherwise make the strike illegal.

AFL-CIO Renews Call For Higher Wage Rates

The AFL-CIO is about to begin in earnest a vigorous campaign to break down employer efforts to slow or halt the upward trend in labor rates.

Rallying point for the federation is the steel strike. Monday has been designated by the AFL-CIO as "Support the Steelworkers Day."

In setting the tempo for Labor Day, President George Meany said that if the steelworkers are victorious in the present steel strike, "the whole wall of resistance erected by big business against further wage increases will crumble." (The AFL-CIO expects to come up with a "definite program" at its Third Constitutional Convention in San Francisco this month for making AFL-CIO support of the steelworkers effective.)

Mr. Meany, at the same time, reasserted labor's charge that there is nothing "haphazard or unconnected" about management's insistence on a wage freeze in steel, efforts to obtain "restrictive labor legislation" at the federal level, and adoption of right-to-work laws at the state level. All, he said, have been carefully planned and financed by " big business" to cut down the power of organized labor.

Mr. Meany called on all members of the federation to rededicate themselves "on Monday to winning the "cold war" that "business interests" have "deliberately invoked" against unions.

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.40 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

Bids: September 27, 1959.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, sealed proposals will be received until ten-thirty o'clock A. M., advanced standard time, which is nine-thirty o'clock A. M., eastern standard time, on the 10th day of September 1959, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

DIST. NO. 5, E. G. H. Youngman, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, New York

CHAUT. R. C. 59-147, IRVING-SILVER CREEK $450.—$8,000.—PLANS—$5.—Cattaraugus Indian Reservation, BR. 1A

BRIDGE REPAIRS (TEMP. STEEL BENT-SOUTH ABUTMENT)

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wages), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

Announcement

by

Ministry of Housing and Works
Baghdad, Iraq

The final dates of submission of Tenders listed below have been postponed as follows:

Basra Hospital, No. of Contract 2/1959 up till 12 Noon September 12, 1959.

Amara Hospital, No. of Contract 3/1959 up to 12 Noon September 16, 1959.

Kadhemain Hospital, No. of Contract 1/1959 up till 12 Noon, September 26, 1959.

Bids: September 17, 1959.

Cleaning and Painting Movable Dam

NOTICE TO BIDDERS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Canal Law and Highway Law, sealed proposals will be received, until 10:30 A.M., D.S.T., on September 17, 1959 by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, the Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

Contract M 59-10 for Cleaning and Painting Movable Dam 10, Erie Barge Canal and Bridge E-44 Montgomery and Oneida Counties, New York

Engineer's Estimate for M 59-10 is $33,000. Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 12th Floor, The Gov. Alfred E. Smith State Office Bldg., Albany, New York.
(b) Department of Public Works, 270 Broadway, New York City, New York.
(c) In addition to the above mentioned offices, plans, maps and specifications for Contract M 59-10 may be examined and obtained at the office of Mr. Lacy Ketchum, 109 No. Genesee St., Utica, New York.

The deposit for Plans and Proposal Forms for Contract M 59-10 is $10.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Proposals for Contract M 59-10 must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" in the amount of $1,700.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Canal Law and Highway Law as set forth in "Instructions to Bidders" in the contract specifications.

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

Bids: October 15, 1959.

Feeder Road Program
Ministry of Public Works
Republic of El Salvador

Bids: November 1959
Prequalification: October 15, 1959
Prequalification Questionnaire

NOTICE TO CONTRACTORS

The Ministry of Public Works of the Republic of El Salvador advises that during the month of November, 1959, the first bidding will take place for the construction of a major portion of the proposed Feeder Road Program of the Country. The Specifications, Plans and Contract Documents will be available for sale in El Salvador on September 21, 1959.

All Contractors interested in taking part in this bidding and in future biddings are requested to obtain copies of the Prequalification Questionnaire which is available in the Office of the Proveedor Especifico de Obras Publicas, Edificio Morazan, 8° C. P., San Salvador, El Salvador, C. A. These questionnaires must be completed and returned to the Proveedor not later than October 15, 1959.

MINISTRY OF PUBLIC WORKS
REPUBLIC OF EL SALVADOR
C. A.

Bids: October 1, 1959

Sewage Treatment Plant Additions and Improvements—Stage II

ADVERTISEMENT FOR BIDS
FREEPORT, NEW YORK

Sealed proposals for furnishing all material and labor and doing all work for the construction of Additions and Improvements to Sewage Treatment Plant, Stage II, of the Village of Freeport, New York, will be received by the Board of Sewer Commissioners of the Village of Freeport at the Municipal Building, 46 North Ocean Avenue, Freeport, New York, until eight P.M., E.D.S.T., on the 1st day of October, 1959, at which time and place they will be publicly opened and read.

Separate proposals will be received on the four divisions of the work as follows:

Contract A—General Construction, Additions and Improvements to Sewage Treatment Plant, Stage II.

Contract B—Electrical Work, Sewage Treatment Plant, Stage II.

Contract C—Heating and Ventilating, Sewage Treatment Plant, Stage II.

Contract D—Plumbing Work, Sewage Treatment Plant, Stage II.

The Information for Bidders, Form of Bid, Form of Contract, including General Conditions, the Specifications, the Plans, the forms of Performance and other surety bonds may be examined at the office of the Village Clerk, Municipal Building, Freeport, New York, or at the office of Baldwin & Cornelius Co., Village Engineers, Freeport, New York, and copies thereof may be obtained from the Village Clerk upon deposit of Fifty Dollars ($50.00) for each set, to be refunded to bidders upon return of the Plans and Documents in good condition within thirty (30) days after the opening of bids. Such deposit will not be refunded to anyone who takes out such Documents and does not bid on the work.

Documents may be obtained by prospective bidders until four P.M., E.D.S.T., Thursday, September 24, 1959.

Each bidder must deposit with his bid a bid bond in an amount of not less than five percent (5%) of the base bid, and made payable to the Village of Freeport. The form of bid bond may be found on Page C-9.

The successful bidder will be required to furnish a Performance Bond and Labor and Material Bond, having as surety thereon such surety company or companies as are approved by the Board of Sewer Commissioners, each in an amount of not less than 100% of the total amount of the accepted bids.

In submitting a bid, bidders agree not to withdraw their bid within forty-five (45) days after the opening thereof.

The Board of Sewer Commissioners reserves the right to reject any or all proposals and to waive any informality in the proposals received and if awarded, shall award the contract to the lowest responsible bidder furnishing the required security.

EDWARD M. VOELKER, CHAIRMAN
HAROLD K. BLINN
GUSTAV J. BERKEL
BOARD OF SEWER COMMISSIONERS
VILLAGE OF FREEPORT, N. Y.

Sealed bids for alterations and remodeling of a building belonging to the Government of the Kingdom of Greece (69 E. 79 St., N. York C.) will be received until September 24, 1959. Bidding documents may be obtained Monday through Friday 10 a.m. to 4 p.m. from the custodian of above building.

READ THE OFFICIAL PROPOSAL COLUMN OF ENGINEERING NEWS-RECORD THIS WEEK AND EVERY WEEK

Bids: September 17, 1959

Miscellaneous Work on Erie Barge Canal

NOTICE TO BIDDERS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Barge Canal Improvement Law and Highway Law, sealed proposals will be received, until 10:30 A.M., D.S.T., September 17, 1959 by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, the Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

Contract U.S. 99 for
New Gates, Lowering the
Lower Sill, Replacing the
Upper Sill and Other Misc.
Work at Lock 19, Erie Barge
Canal, Herkimer County, New York.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 12th Floor, The Gov. Alfred E. Smith State Office Bldg., Albany, New York.
(b) Department of Public Works, 270 Broadway, New York City, N. Y.
(c) In addition to the above mentioned offices, plans, maps and specifications for Contract U.S. 99 may be examined and obtained at the office of Mr. Lacy Ketchum, 109 No. Genesee St., Utica, New York.

The deposit for Plans and Proposal Forms for Contract U.S. 99 is $10.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

The Engineer's Estimate of Cost for Contract U.S. 99 is confidential and will be made known after all bids have been opened.

Proposals for Contract U. S. 99 must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of five percentum, (5%) of the bid. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Barge Canal Improvement Law and to the Highway Law as set forth in "Instructions to Bidders" in the contract specifications.

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

Bids: September 10, 1959.

Board of Education—Bureau of Construction
Notice Re: Prequalification Forms For Contractors

APPROVED AS TO FORM
Acting Corp. Counsel

NOTICE IS HEREBY GIVEN THAT

The Superintendent of School Buildings, Bureau of Construction, 4th Floor, Room 407, 42-15 Crescent Street, Long Island City 1, N. Y., will receive applications for prequalification from contractors who may wish to submit bids for the proposed hereinafter specified contracts as follows:

general construction, plumbing and drainage (including heavy kitchen equipment), heating and ventilating, electrical work and lighting fixtures

THE BRONX
New P.S. 1, E. 152nd & E. 153rd Sts. West of Courtlandt Avenue

MANHATTAN
New P.S. 145, Amsterdam Ave., bet. W. 104th and 105th Streets.
New P.S. 155, E. 117th St., bet. 1st and 2nd Aves.

QUEENS
New P.S. 203, Springfield Blvd., bet. 51st and 56th Avenues, Bayside

Prequalification application forms will have to be secured from and must be submitted to the Superintendent of School Buildings, Bureau of Construction, 4th Floor, Room 407, 42-15 Crescent Street, Long Island City 1, New York.

Bids when advertised, will be received from prequalified bidders only.

Time for submitting prequalification applications by contractors will expire on Thursday, September 10, 1959.

Starting: Monday, August 31, 1959.
Five (5) Days.

Dated: August 20, 1959

Bids: June 1, 1960.

Government of Hong Kong—Shek Pik Water Scheme. Laying Twin Submarine Pipelines

The Government of Hong Kong invite tenders from contractors with experience of laying submarine pipelines for the laying of two 30 inch diameter steel pipelines to carry filtered water from Lan Tao Island to Hong Kong.

The main items of the works are:—

a. welding, bitumen sheathing, and concrete cladding of the pipes which are supplied by the Government of Hong Kong;
b. laying the pipes as twin pipelines each about 5 miles long, and burying them below the sea bed.

The Contract documents can be inspected at the office of the undersigned and can be obtained from them on payment of twenty-five pounds during the period 2nd. November, 1959, to 1st February, 1960,—the deposit to be refunded on receipt of a bona fide tender.

Sealed tenders, endorsed "Tender for Shek Pik Submarine Pipeline" and addressed to the Chairman of the Tender Board, Colonial Secretariat, Lower Albert Road, Hong Kong, must be delivered to the above address by noon on 1st June, 1960.

Tenderers are warned that the fair weather season which is suitable for site investigation is limited to the period beginning in November and ending in May.

The Government of Hong Kong does not undertake to accept the lowest or any tender, nor will expenses in connection with tendering be defrayed, but tenderers must make themselves fully acquainted with the site and conditions of work.

BINNIE, DEACON & GOURLEY,
Artillery House, Artillery Row,
Westminster, London, S. W. 1.

Bids: September 22, 1959.

Contract NYA-140.042

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
VAN WYCK ENTRANCE ROAD
LANDSCAPING
PHASE II

Sealed proposals for landscaping portions of the Van Wyck Entrance Road from South Conduit Avenue to the Central Terminal Area at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1140, 111 Eighth Avenue New York 11, N. Y., until 2:30 P.M. on Tuesday, September 22, 1959, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, September 3, 1959

Bids: September 22, 1959.

New Jersey Turnpike Authority

ADVERTISEMENT FOR PROPOSALS
CONTRACT NO. R-46

Proposals are invited for Contract No. R-46 which involves the construction of a median barrier and other incidental work in the median and on the inner shoulders of the New Jersey Turnpike from Mile 110 in the Town of Secaucus to Mile 117 in the Borough of Ridgefield Park, all in Hudson and Bergen Counties, New Jersey.

The principal items of work include:

Galvanized Double Guard Rail Median Barrier	28,700 Lin. Ft.
Galvanized Single Guard Rail Median Barrier	4,400 Lin. Ft.
Concrete Median Barrier	2,500 Lin. Ft.
Macadam Median Surfacing	34,400 Sq. Yds.
Single Bituminous Surface Treatment	43,500 Sq. Yds.

Proposals will be received at the New Jersey Turnpike Authority Administration Building, New Brunswick, New Jersey, until 11:00 o'clock, Eastern Daylight Saving time, on the morning of September 22, 1959, at which time and place said proposals will be publicly opened and read.

Each bidder must submit with his proposal a Contractor's Financial and Equipment Statement.

Contract documents may be examined during office hours on or after September 1, 1959, at the office of the Authority, and will be furnished upon payment of Ten Dollars ($10.00) for each set, not returnable.

NEW JERSEY TURNPIKE AUTHORITY
Joseph Morecraft, Jr., Chairman

EMPLOYMENT—OPPORTUNITIES

Send NEW Ads and Inquiries to Classified Advertising Division of ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36.

WANTED
PROJECT MANAGER

Experienced executive to handle all phases of large, foreign, heavy construction projects. Experienced in client and contract negotiations.

P-2414 Engineering News Record
Class Adv. Div., PO Box 12, N.Y. 36, N.Y.

ADDRESS BOX NO. REPLIES TO: Box. No. Classified Adv. Div. of this publication. Send to office nearest you.
NEW YORK 36: P. O. BOX 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• *POSITIONS VACANT*

Asst. Prof.—To teach undergrad. courses in transportation, surveying, and fluid mechanics. Salary open. Civil Eng., University of No. Dak., Grand Forks.

Wanted: Young graduate Civil or Hydraulic Engineer interested in overseas assignment with consulting firm. State education, background and experience. Reply fully to P-2359, Engineering News-Record.

Graduate Civil Engineer with at least two years experience in layout of water mains, small pumping stations and filter plants. Send resume of experience, references, salary desired, date available to Gannett Fleming Corddry & Carpenter, Inc., Box 366, Harrisburg, Penna.

We are seeking Engineers and Construction men on the Vice-President level for International operations. Minimum investment opportunity $15,000.00 if rigid qualifications are met. Salary and profit sharing plan. Send resume to P.O. Box 722, University Station, Montreal, Quebec.

Estimator—Top pay and working conditions for a fully experienced productive competitive estimator. Wingate Construction Company, 31 South 17th St., Phila. 3, Pa.

OFFICIAL PROPOSALS enable you to get the greatest variety of bids—and so to get the lowest prices consistent with the best work.

EMPLOYMENT NATIONAL COVERAGE OPPORTUNITIES

DISPLAYED RATE:

The advertising rate is $39.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

UNDISPLAYED RATE:

$2.40 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take ½ of above rate.

Box numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to agency Commission.

Send NEW Ads and Inquiries to Classified Advertising Division or ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36.

• POSITIONS VACANT

Construction superintendent, concrete and masonry, multi-story housing project, location American Virgin Islands, start 1 October, duration 25 months, salary and bonus. Send complete resume P. O. Box 37-683, Miami, Florida.

Surveyor: With experience in running metes and bounds surveys and subdivision work. Top salary to qualified man. Location N. J. Coast town. P-2162, Engineering News-Record.

Civil Engineer minimum 5 years experience highway design for established consulting firm. Location Washington, D. C. Submit resume. P-2270, Engineering News-Record.

One senior mechanical engineer and one senior electrical engineer fully experienced in all phases design of mechanical and electrical respectively for all types of buildings. Mechanical engineer to have thorough knowledge of air conditioning design. Both positions permanent with established consulting engineering firm in south Florida. Send complete resume of education, experience and salary requirements. P-2260, Engineering News-Record.

Mechanical Design Engineer: Pulp and Paper Mill machinery and equipment design. Equipment and material selection, specifications and layout. Minimum 4 years' design experience, preferably in the pulp and paper industry. Engineering degree required. Salary commensurate with ability. Send resume to: Personnel Manager, West Virginia Pulp and Paper Company, Luke, Maryland.

Railroad Track Construction Engineer-Estimator must be capable of bidding and executing work for Private Track Contractor fully equipped with modern track laying equipment. State background, experience and salary required. Excellent opportunity for right man. Reply to: P.O. Box 274, Cincinnati 14, Ohio.

Job Superintendent—minimum 5 years experience as superintendent or carpenter foreman on concrete projects preferably in water and sewage tank field. Gunite experience helpful but not essential. Travel required. Submit resume with references, recent photograph, and salary requirements. Reply to P-2183, Engineering News-Record.

Estimator Wanted General Construction— Must be familiar with take-off, pricing, purchasing, sub-contracts. Excellent opportunity. General Contractor located near Chicago. Reply fully covering experience, personal data, and salary requirements. P-2194, Engineering News-Record.

Civil Engineer for materials research in ice at the University of Alaska and Office of Naval Research Arctic Research Laboratory, Barrow, Alaska. H. R. Peyton, Arctic Res. Lab., Box 1070, Fairbanks, Alaska.

Construction Estimator Wanted—We have wonderful opportunity for you if you are hard working, intelligent and ambitious. Good salary plus profit sharing for qualified applicant. Only man experienced in large institutional and industrial construction need apply. Location—Milwaukee. Send resume of age, education and experience to P-2486, Engineering News-Record.

Wanted—Reinforcing Steel Detailer to learn bar estimating and become part of the Sales-Estimating Department of growing Fabricator. Excellent opportunity for smart, aggressive man. Good starting salary plus usual benefits. P-2513, Engineering News-Record.

Mechanical engineer experienced in industrial machinery design for R and D section of mid-west waste treatment equipment manufacturer. Send complete resume including details of expected salary, date of availability, and references. P-2505, Engineering News-Record.

• POSITIONS VACANT

City Engineer. Albany, Oregon. Population 14,900. Salary $500-$630. Requirement: Oregon registration as Professional Engineer. Apply to City Manager, P.O. Box 490, Albany, Oregon by October 5.

Structural Steel Detailer, experienced for opening with long established structural fabricator in Central New York State. P-2496, Engineering News-Record.

Assistant City Engineer $725-835 with $200 per month credited to fringe benefits, including liberal retirement system. Engineering standards of organization high with progressive, well coordinated staff. Extensive experience in civil engineering, including responsible supervisory experience. Degree in civil engineering. Qualified to become registered in Arizona. Apply within ten days from date of this publication to Leroy J. Brenneman, Personnel Director, Phoenix, Arizona.

Graduate civil engineer. Opening for recent college graduate as testing engineer in the field of highway materials at a laboratory located in Washington, D. C. Write resume of education, experience, personal data, references, and expected salary. P-2509, Engineering News-Record.

Industrial Subdivision Engineer for major Midwest railway company: Chicago office. Permanent. Good salary. Benefits. Experience in municipal engineering, zoning, utilities, roads and land planning for industry would be excellent background for man sought. Travel. Ability to work, make contacts, etc., without close supervision, promotion opportunity excellent. Our employees know of this ad. P-2189, Engineering News-Record.

Engineer, civil, or draftsman, first class only, experienced in field layout work—also engineer skilled in calculations, computations, quantity take-offs, drafting, on large construction projects. P.O. Box 102, Barre, Vermont.

• POSITIONS WANTED

Construction Supt. and Reg. Engineer desires sewer work. Both have extensive heavy construction experience. Will assume responsibility for engineering, layout, and field supervision for salaries plus % of profit. P. O. Box 6336, Columbus, Ohio.

Equipment Maintenance superintendent. For heavy construction co. Top level manager thoroughly experienced in repair and preventive maintenance. Age 36, foreign or domestic. PW-2311, Engineering News-Record.

Construction Executive. 40, graduate Engineer, head of smaller construction company for 10 years doing public work, buildings, water and sewage facilities, and general construction. Available for responsible position. PW-2382, Engineering News-Record.

Project mgr.—Const. Supt; Age 52; 30 yrs const. experience, will consider any type project; best references; $15,000 min.; available Sept. 1; PW-2335, Engineering News-Record.

Bridge Supt. or Foreman. Take full charge. PW-2325, Engineering News-Record.

Bridge & Structural Designer. Long experience on railroad and highway bridges, steel-concrete industrial structures. Cornell grad. Location mid-west or California. PW-2310, Engineering News-Record.

Civil Engr.—12 yrs. experience, reg. P.E. & L.S., desires responsible position with consultant or municipality in southwest area. Available October. PW-2301, Engineering News-Record.

Executive, female. Legal & Const. Background. Exp. Administrator, Mgr. Govt. Contracts Etc. PW-2521, Engineering News-Record.

• POSITIONS WANTED

Purchasing: General Construction. Excellent experience large & small jobs. Well versed in office mgmt, equip. and material procurement. Some experience with state and federal contracts. PW-2124, Engineering News-Record.

Mechanical Contractors: Vice president of a national concern desires permanent connection with smaller company eager to grow. Proven ability to secure and manage multi million dollar work. Broad experience in commercial, institutional and industrial fields. Wide acquaintance among key subcontractors and major general contractors. Under 40. PW-2426, Engineering News-Record.

Civil Engineer, BSCE, 36, married. Ten years structural design, contract management and administration. Gov't and private industry. Willing to travel some, wants to change. PW-2515, Engineering News-Record.

Construction Superintendent: Age 52, 30 years of heavy construction—prefer S.E. location—Best References. PW-2510, Engineering News-Record.

Rock man experienced free to travel. PW-2474, Engineering News-Record.

Project Manager hvy. const. B.S.C.E. Highways, flood control, etc. presently employed. Prefer West Coast. PW-2520, Engineering News-Record.

Field Office—Experienced—Asst. to project mgr. or engineer timekeeping, cost, payroll, personnel, purchasing, office. Mobile-readily available. PW-2514, Engineering News-Record.

Field and layout engineer B.S.C.E. 18 years experience—steam plant, lock, dam, and building-supervision several parties—charge of civil, structural and architectural aspects of related construction. E. E. Boudman, 101 Fernwood Avenue, Elmira, N. Y.

Construction Engr. Civil-Mech. B.S.C.E. 19 yrs. heavy constr. Design, Superv. estimating, specifications, field layout, soils, planning. Industrial, commercial, military, highway, marine, p.o.l., power plants. Fluent French-Spanish, Italian. Some Arabic, Turkish. Available 1 Jan. PW-2502, Engineering News-Record.

Construction Superintendent experienced on hiways and airfields. Producer. PW-2512, Engineering News-Record.

Graduate Civil Engineer, age 32 years. 2 3 of P.E. exam. passed. 6 years as project engineer on road and bridge const. Present salary $10,000. Prefer management or administration position, but will consider all offers. PW-2511, Engineering News-Record.

Constr. Supt., or Prod. Mgr.—C.E., 25 yrs. constr. exp., matured, competent and capable of assuming full responsibility for general heavy construction. PW-2484, Engineering News-Record.

Millwright Superintendent: Fast, Capable and Sober. Prefer South or Southwest. PW-2519, Engineering News-Record.

Asphalt Plant Superintendent or Manager— Experienced good references—Know materials. PW-2504, Engineering News-Record.

Construction Superintendent will accept position in South America or Caribbean area. 3[illegible] years old, 15 years experience on general construction. Complete knowledge of English and Spanish. Write to Nazario, 360 Escorial Street, Caparra Heights, San Juan, Puerto Rico.

Supt. or General foreman—age 43—over 18 years experience highway construction supervising earthmoving equipment, excavating, drainage. Know men, methods and cost. Available at once. A-1 references. PW-2490, Engineering News-Record.

TWO TRAVELING GENERAL SUPERINTENDENTS AND ONE CHIEF ESTIMATOR FOR MAMMOTH HOUSING PROJECTS IN THE SOUTHEAST

Superintendent must have ability to effectively communicate technical instructions related to construction, labor, community and Government Relations to Project Superintendents.

Chief Estimator will be responsible for preparation, presentation and estimations for material, labor, paving and utilities.

Salary commensurate with ability. Qualified applicants are invited to submit summary of experience, education and telephone number.

P-2185, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

The Commonwealth of Pennsylvania Seeks

HIGHWAY & BRIDGE DESIGNERS

with C.E. degree and 1 to 5 years of design experience.

• JUNIOR DESIGNERS • DESIGNERS • SQUAD LEADERS • SUPERVISORS

Salaries from $5500 to $9000 per year
based upon qualifications.

Write for application forms. Filing date for Civil Service examinations Sept. 23.

PERSONNEL, PA. HWYS. DEPT., HARRISBURG, PA.

ENGINEERS

OVERSEAS IRRIGATION PROJECT

Long established firm of consulting engineers with world-wide practice has following immediate openings on system for 30,000 acre irrigation project in JORDAN.

IRRIGATION AGRONOMIST

Qualified to work with designers on farm unit layout. Position requires technical education and extensive background in commercial agriculture and agriculture economics.

EARTH & MATERIALS INSPECTOR

Qualified inspector with extensive experience in earthwork and concrete construction. Experience in location, investigation and testing of materials and measurement of quantities for payment also required.

CONSTRUCTION SUPERINTENDENT

Experienced, capable of getting work done by local personnel with a minimum of equipment. Responsible for organization, efficient operations, quality and speed of construction.

All positions will involve training of Jordanian personnel. Two year contracts, some living expenses and other fringe benefits. Send complete detailed resume to personnel Department.

HARZA ENGINEERING COMPANY
400 W. MADISON ST.
CHICAGO 6, ILLINOIS

GENERAL FOREMAN

Major Steel Company has need for top notch man with college background to supervise construction crews installing fabricated products in Midatlantic area. Projects include Tunneling, Jacking and Boring. Attractive starting salary with company car, expenses and bonus plan.

P-2188, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

PLANNER

Community Planner I. $5244-$6636. Starting salary above minimum rate for outstanding qualifications. Longevity rates above maximum salary for long service. Degree in City Planning, Architecture, Engineering or related fields. To participate in the preparation of the various aspects of urban renewal plans.

CITY PERSONNEL DEPARTMENT
404 City-County Bldg., Madison 3, Wis.

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DISTRIBUTOR OF COMPLETE LINE HEAVY DUTY TRUCK AND TRACK MOUNTED EXCAVATORS IN NEW YORK CITY AREA INTERESTED TAKING ON ADDITIONAL EQUIPMENT USED BY HEAVY CONSTRUCTION INDUSTRY—

RA-2115, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

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When answering the classified advertisements in this magazine don't forget to put the box number on your envelope. It's our only means of identifying the advertisement you are answering.

CIVIL ENGINEER

OVERSEAS
ON
HIGHWAY PROJECT
IN THAILAND

Require recent graduate Civil Engineer with some construction inspection and survey experience. Twenty month contract in bachelor status. Must pass physical examination and security investigation.

- EXCELLENT SALARY
- OVERSEAS BONUS
- COMPLETION BONUS
- EXTRA VACATION ALLOWANCE
- MEDICAL CARE & INSURANCE

Write fully, include complete salary information to:

SVERDRUP & PARCEL ENGINEERING CO.
915 Olive St., St. Louis 1, Missouri

Specialized Machine Designer

for employment with a major Chemical Company in the Gulf Coast area. Applicants must be qualified and experienced in the intricate design and application of reciprocating and rotary motion, and energy conversion. A thorough knowledge of metallurgy, thermodynamics and harmonics is essential.

Send resume and salary requirements to:

P. O. Box 88025, Houston 4, Texas

Interviews arranged for qualified applicants only.

All replies will be held in strict confidence.

Manufacturer's District Representative North East Territory

Excellent opportunity—Experienced in underground excavating equipment.

THE PARSONS COMPANY
Division of Koehring Company
NEWTON, IOWA

COMPUTER ENGINEER

Registered Graduate Civil Engineer with 5-year minimum design experience in highways and bridges. Some computer experience desirable. Responsible, permanent position in our Bendix G-15 Computer Division. Salary open. Send resume to:

RICHARDSON, GORDON AND ASSOCIATES
3 Gateway Center, Pittsburgh 22, Pennsylvania

SEARCHLIGHT SECTION

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The advertising rate is $25.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured 7/8 inch vert. on one col., 3 columns—30 in. to a page.

EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

UNDISPLAYED RATES

$2.40 a line, min. 3 lines. To figure advance payment count 5 average words as a line.

BOX NUMBERS count as one additional line in undisplayed ads.

DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads.

STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING
OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty-eighth year.
Write today, without obligation.
WILSON *Engineering Corp.*
College House Offices HARVARD SQ., CAMBRIDGE, MASS.

FOR SALE

Seven (7) Steel trusses
A-1 condition, for 83 foot span, cheap.

Park Steel & Iron Company
Evergreen & R.R. Aves.,
Bradley Beach, New Jersey

FOR SALE
2—FLYGT B-200 L 8" SUBMERSIBLE ELECTRIC PUMPS
Rebuilt by factory equal to new, and guaranteed. Complete with starter and cables.
Heavy Equipment Rental and Sales Co.
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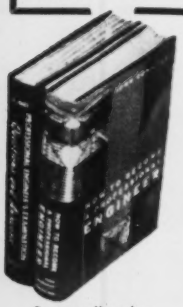

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Growth, But No Boom

THE OUTLOOK for 1960's dollar volume of new construction is bright but not shining. The total picture, as seen by ENR's Business News Department (see p. 21), is one of continued growth through '60 and '61. But it will be growth on the order of 3% and 4%, respectively, and growth almost totally dependent on an increase in private construction. The postwar growth in state and local public works activity has halted; its direction now is down.

Fortunately for heavy construction, private projects and public works tend to keep a healthy sort of balance. It is generally accepted that public works can't quickly be turned on and off to prime the pump of the entire economy. Yet public spending on construction can rather effectively offset a decline in private spending, as it did in bringing the construction industry out of the 1958 recession much sooner than manufacturing industries recovered. Now public works are dropping off, but the increase in private investment—particularly industrial buildings—will more than offset this drop for the next two years.

ENR's forecast for '60 should be both guide and challenge to those who will share in the $20.8-billion total predicted on the basis of a 3% gain. As a guide it points up the categories that will be gaining, and those that will be on the decline. But just as important is the challenge that a public works fall-off represents. For public works are an ingredient that the economy must have if it is to continue to grow. A reduction in highway building will stunt that growth. So will any large shift downward of state and local public works. These are at least two areas where effort should be expended to reverse the present tendency toward declines. Such a reversal is necessary if the construction picture ahead is to be really good and not just fair.

A Penny for His Thoughts

DECIDING WHAT Soviet Premier Khrushchev should see during his visit to the U.S. has come to be something of a national pastime. So, in this issue the editors of ENGINEERING NEWS-RECORD indulge in the game by selecting what of construction might give the Soviet's top man the most to think about (see p. 34).

The actual game of impressing Mr. Khrushchev—to send him back to Russia with new and more accurate thoughts about our nation—will preoccupy most of those he contacts while here, of course. And if showing him some of the construction achievements of our country will do any good, we hope Mr. Khrushchev sees what we build—as well as what we manufacture, mine, generate and grow.

Unfortunately, however, it is not with these material things that the Communists need most to be impressed. On that level, of course, they already compete with us in the production of many things; they may even excel in some areas. The basic difference between us is not in the quantities or qualities of material things that they and we produce. Rather, it is the spiritual significance of our material bounty that the Communists must be brought to perceive.

Speaking to U.S. businessmen on the challenge of Communism, Lebanon's Charles H. Malik, who was president of the U.N.'s General Assembly in 1958, once said: "There is one thing in which they cannot excel because they do not know it and are not even thinking of it. That is the power and depth and freedom of the spirit in which man is fully himself." Let this kind of thought reach the Soviet mind through Premier Khrushchev's visit and through President Eisenhower's return call, and some real purpose may have been served. If indeed the Premier could go home merely pondering the motto on the head of our penny, his visit would be a success.

A Promising Advance

SANITARY ENGINEERS and municipal officials looking hopefully for better answers to waste disposal problems will watch with keen interest the performance of new sewage-sludge oxidation plants ordered by Chicago and Wheeling. The two cities have contracted for the first full-scale municipal plants using the new Zimmermann wet-oxidation process (ENR June 18, p. 42).

Chicago and Wheeling are probably about as good a sampling for observation as one could get with only two cities. Chicago's four 50-ton-a-day (of solids) units could form part of the facilities for a major city of any size. Wheeling, with a population of about 59,000, has ordered a unit with a daily oxidation capacity of 5.6 tons of solids, a magnitude likely to excite wide practical interest outside the great population centers.

Besides size difference, the two plants will vary in another manner likely to increase interest among potential users. Chicago's installation will be designed to handle a mixture of primary and activated sludge, with a solids content of 3%. Wheeling's plant will be designed for primary sludge only, with 6% solids.

The Zimmermann process can't be rated as a technical breakthrough that will revolutionize sewage treatment. Such a development may, in fact, never occur despite hopes to the contrary. In the meantime, however, if the Zimmermann process can provide the greater convenience and lower cost that it promises in the troublesome area of sludge disposal, it will constitute a real advance. The pioneer installations at Chicago and Wheeling, therefore, deserve the close attention of the entire sanitary engineering fraternity.

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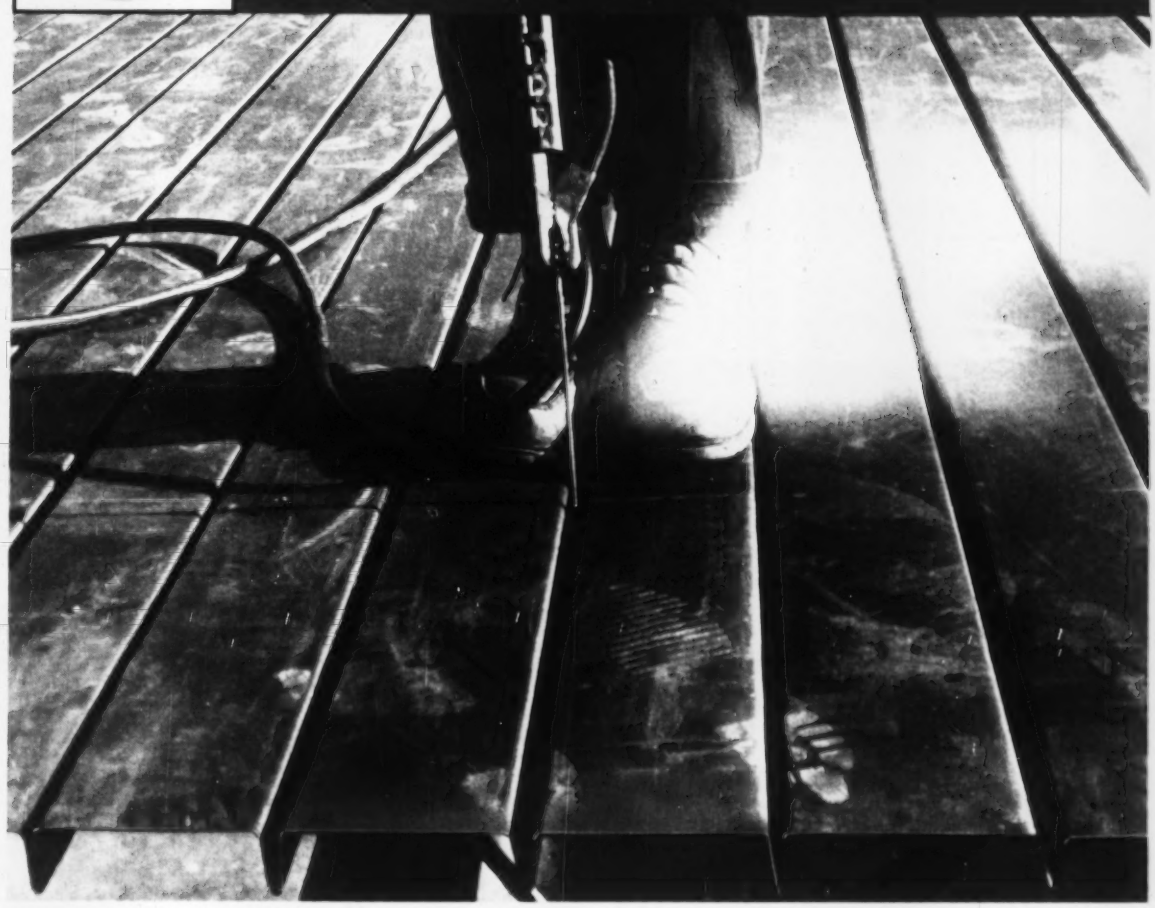
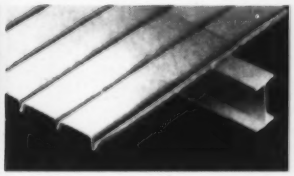


Here's everything you want in a roof deck!

CLEANER – Tri-Rib Roof Deck is always made from Wheeling's quality steel. Unlike decks made from other substances, Tri-Rib will not dust off and it cannot be attacked by fungus. What's more, Tri-Rib saves time and money because it can be installed in any weather . . . rain or shine.

GREATER STRENGTH – Some decks are made of ordinary commercial grade steel. But not Tri-Rib! It's always full-gauge *structural* grade. You get higher tensile strength and an extra safety factor. Tri-Rib fully complies with the latest A.I.S.I. Light Gauge Steel Design Manual.



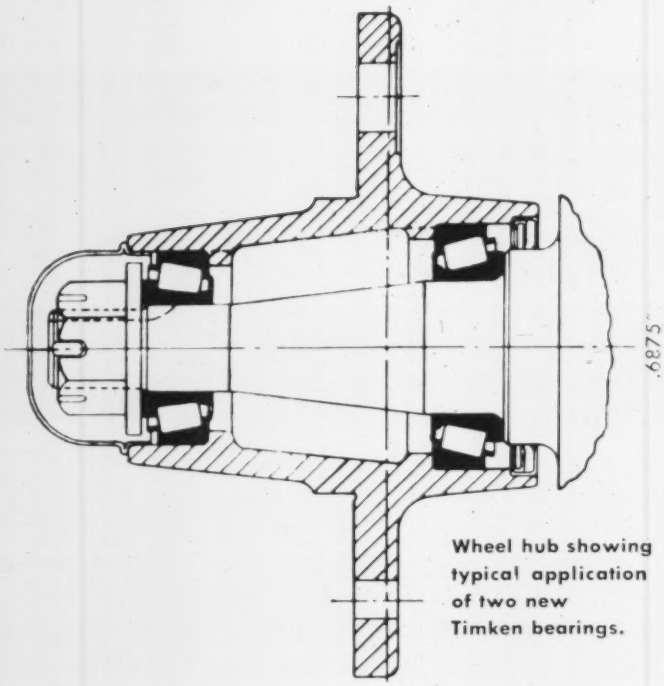
UNIFORM – Every piece fits without forcing because Tri-Rib is made by one of America's most experienced steel producers. In addition to serving as a primer, Tri-Rib's specially formulated zinc chromate, iron oxide paint affords positive rust resistance during construction.

ONE FIELD COAT – Tri-Rib's *baked-on* coating takes any good field paint regardless of color. One field coat does the job in nearly every case. Get the full story on Tri-Rib from your Wheeling representative. Or write Wheeling Corrugating Company, Wheeling, West Virginia.

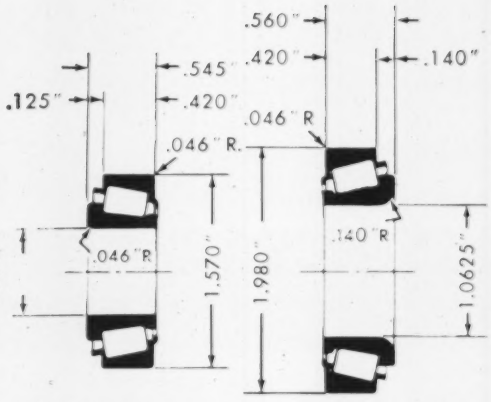
WHEELING CORRUGATING COMPANY · IT'S WHEELING STEEL!

Immediate delivery on all stocked items from these warehouses: *Boston, Buffalo, Chicago, Columbus, Detroit, Kansas City, Louisville, Minneapolis, New Orleans, New York, Philadelphia, Richmond, St. Louis.* Sales Offices: *Atlanta, Houston*

Three new, low-cost TIMKEN® bearings open new design opportunities



Wheel hub showing typical application of two new Timken bearings.



LM 11749—LM 11710
Wt. .181 lb.

L 44649—L 44610
Wt. .256 lb.

ALSO L44643
SAME AS ABOVE
EXCEPT WITH 1" BORE
Wt. .276 lb.

WITH three new small size Timken® bearings, machine designers can now get the advantages of tapered roller bearings where they couldn't be used before. These new, smaller bearings pack high capacity in less space, and they're lower in cost. They permit more compact designs by keeping related parts smaller—provide additional savings in hub materials, seals, nuts and dust caps.

Diagram above at left shows two of them in a typical layout of a front wheel hub for the Automotive Industry's new compact cars. They're the most economical single-row Timken bearings ever produced in bore sizes of $^{11}/_{16}$", 1" and $1^{1}/_{16}$". Diagram above at right shows principal dimensions and weights.

Like all Timken bearings, these new Timken tapered roller bearings are geometrically designed and precision-made to roll true. Their taper lets them take *both* radial and thrust loads in any combination. And full-line contact between rollers and races provides extra load-carrying capacity.

Our Sales Engineers will gladly give you complete data, help you design the new bearings into your machines. Timken bearings make any machine better, because Betterness rolls on Timken tapered roller bearings. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.

TIMKEN®

TAPERED ROLLER BEARINGS ROLL THE LOAD